Vol. 923 Number 3

OFFICIAL GAZETTE

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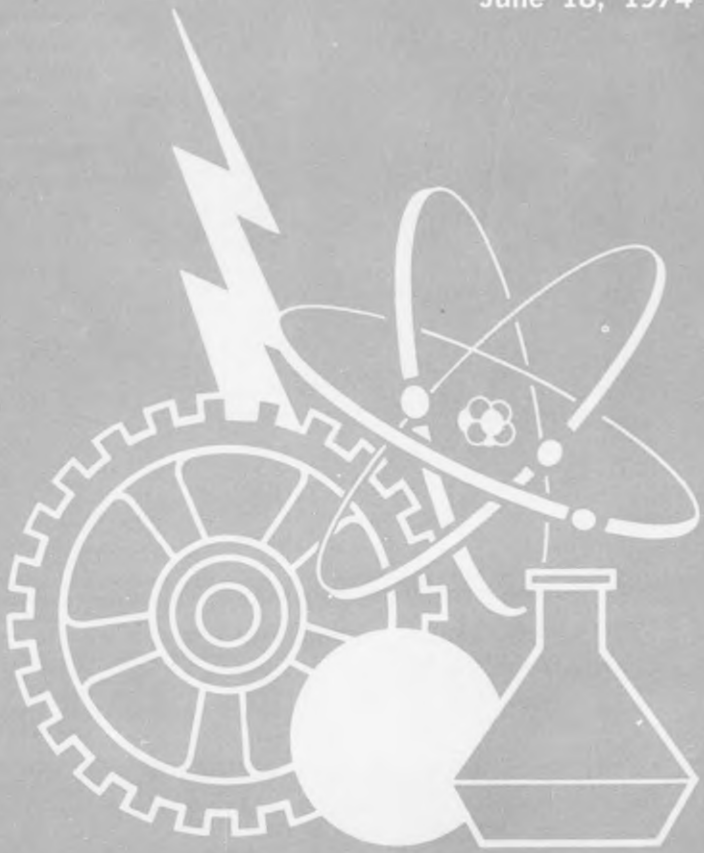
PATENTS

June 18, 1974



U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

June 18, 1974 Volume 923 Number 3

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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

PART 6—CLASSIFICATION OF GOODS AND SERVICES UNDER THE TRADEMARK ACT

International Trademark Classification; Correction

In FR Doc. 73-10996 appearing at page 14681 in the issue of Monday, June 4, 1973 (38 FR 14681), the language in the tenth line of the sixth paragraph of the preamble reading "mark as registered" should read "application was filed," and the language in the sixth line of revised § 2.85(b) reading "registration was granted" should read "application was filed."

Dated: April 26, 1974.

C. MARSHALL DANN,
Commissioner of Patents.

Approved: May 3, 1974.

BETSY ANCKER-JOHNSON,
Assistant Secretary for Science and Technology.

[FR Doc. 74-10822; Filed 5-9-74; 8:45 am]

Published in 39 F.R. 16885, May 10, 1974

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before July 5, 1974.

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LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of any of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before July 26, 1974.

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Certificates of Correction for the Week of June 18, 1974

Re. 27,411	3,764,612	3,779,466	3,788,877
3,507,163	3,764,638	3,779,707	3,789,189
3,600,155	3,765,518	3,779,764	3,789,267
3,614,101	3,766,140	3,780,434	3,789,672
3,619,646	3,766,710	3,780,630	3,790,523
3,631,474	3,766,984	3,780,878	3,790,634
3,642,568	3,767,029	3,780,886	3,791,414
3,651,097	3,767,126	3,781,184	3,791,431
3,663,570	3,767,712	3,781,202	3,791,546
3,680,117	3,767,961	3,781,204	3,791,686
3,681,340	3,767,970	3,781,301	3,792,481
3,687,880	3,768,663	3,781,307	3,793,353
3,699,695	3,769,338	3,781,377	3,793,750
3,700,683	3,769,346	3,781,510	3,793,788
3,711,459	3,769,608	3,782,583	3,793,830
3,714,079	3,770,566	3,783,138	3,793,841
3,723,087	3,770,813	3,783,227	3,794,094
3,726,946	3,771,276	3,783,277	3,794,127
3,732,277	3,771,836	3,783,283	3,794,204
3,735,458	3,772,311	3,783,352	3,794,404
3,736,331	3,773,760	3,783,823	3,794,476
3,737,133	3,773,895	3,783,848	3,794,622
3,740,360	3,773,909	3,783,916	3,794,628
3,743,403	3,774,067	3,784,171	3,794,646
3,743,833	3,774,637	3,784,257	3,794,808
3,745,167	3,774,883	3,785,341	3,794,922
3,745,275	3,775,284	3,785,383	3,794,942
3,749,012	3,775,344	3,785,781	3,795,093
3,753,064	3,776,586	3,786,213	3,795,140
3,753,484	3,776,893	3,786,742	3,795,402
3,755,210	3,776,960	3,787,116	3,795,650
3,755,364	3,777,304	3,787,538	3,796,269
3,756,882	3,777,562	3,787,665	3,796,342
3,757,310	3,777,701	3,787,745	3,796,847
3,757,359	3,778,223	3,787,758	3,796,966
3,757,758	3,778,444	3,787,954	3,796,972
3,758,552	3,778,734	3,787,967	3,797,004
3,759,039	3,779,059	3,788,208	3,797,847
3,759,944	3,779,310	3,788,231	
3,762,094	3,779,458	3,788,433	

Erratum

All reference to Patent Number 3,813,332 to Marion J. Gattuso et al., Color Stabilization of Petroleum Distillates, appearing in the OFFICIAL GAZETTE of May 28, 1974, should be deleted as the application inadvertently issued.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 25, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds: Inorganic Compositions: Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-11-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters: Acid Anhydrides; Acid Halides.	2-14-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-24-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-15-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes: Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-1-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-17-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-11-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-09-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-14-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-09-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-15-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-14-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	6-12-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-17-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-10-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	5-15-73

Expiration of patents: The patents within the range of numbers indicated below expire during June 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,794,186 to 2,797,413, inclusive
Plant Patents..... Numbers 1,606 to 1,611, inclusive

REISSUES

JUNE 18, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

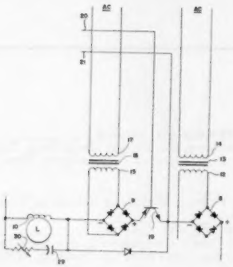
28,044
ELECTRIC CURRENT CONTROL APPARATUS

Don F. Widmayer, Bethesda, Md., assignor to Controlled Environment Systems Inc., Rockville, Md.

Original No. 3,422,310, dated Jan. 14, 1969, Ser. No. 463,583, June 14, 1965. Application for reissue Dec. 14, 1971, Ser. No. 208,006

Int. Cl. H05b *41/39*

U.S. Cl. 315—291 20 Claims



A voltage compliance current control system is provided for controlling current supply to a load over a wide dynamic range independent of the load characteristics. Pulsating direct current supplied to the load is controlled through a feedback sensing network responsive to current flow in the load circuit and a choke coil connected in series with the full-wave rectified AC input voltage acts as an energy storage current source. The system may be used to control the bank of lamps in a plant and cell growth arrangement and lights of different spectral characteristics may be controlled thereby to vary the quantity of light in any given spectral region.

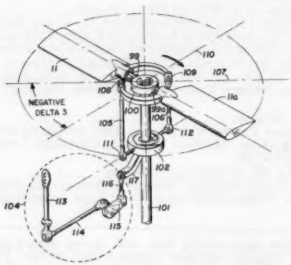
28,045
IN-PLANE OUT-OF-PLANE FLAPPING PROP-ROTOR FREQUENCY DECOUPLING

Troy M. Gaffey and Kenneth G. Wernicke, Hurst, Tex., assignors to Textron Inc.

Original No. 3,494,706, dated Feb. 10, 1970, Ser. No. 671,907, Aug. 28, 1967, which is a continuation-in-part of application Ser. No. 637,539, May 10, 1967. Application for reissue Dec. 8, 1971, Ser. No. 206,219

Int. Cl. B64c *27/52*

U.S. Cl. 416—102 12 Claims



In an aircraft having a flapping blade prop-rotor operable in an airplane configuration at high forward speeds, in-plan and out-of-plane rotor frequencies are decoupled by employing negative delta-3 to cause the blade pitch angle to increase when the blade flaps forward.

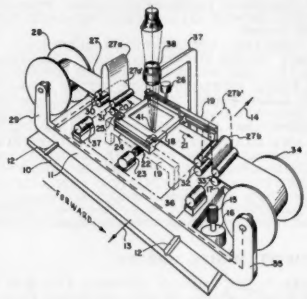
28,046
FILM-POSITIONING SYSTEM

Walter Renold, North Hollywood, Calif., assignor to Seaco Computer-Display Incorporated, Garland, Tex.

Original No. 3,591,282, dated July 6, 1971, Ser. No. 877,376, Nov. 17, 1969. Application for reissue Sept. 5, 1972, Ser. No. 286,195

Int. Cl. G03b *27/46, 27/58*

U.S. Cl. 355—54 18 Claims



A film-positioning system is provided for enabling rapid sequential exposure or readout of film framelets making up a microfiche film frame. Successive framelets are exposed or read out in standard industry step and repeat sequence by moving the microfiche film frame relative to a fixed lens in successive incremental steps without having to move major portions of the apparatus. This is accomplished in part by providing first and second storage loops adjacent to opposite ends of the exposure area to accommodate the movement of the film in exposing or reading out a row of framelets. Other bulky apparatus such as the payout and takeup microfiche film reels need not be incrementally moved when exposing rows but only when shifting to a new row all to the end that exposure of microfiche film framelets or, alternatively, location of a single framelet for readout can more rapidly be effected than possible with equipment provided heretofore.

28,047
PROCESS FOR PREPARING COLORLESS, HIGH-VINYL DIENE POLYMERS

Thomas C. Bouton, Akron, and Shingo Futamura, Seville, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Original No. 3,686,158, dated Aug. 22, 1972, Ser. No. 71,413, Sept. 11, 1970. Application for reissue Aug. 15, 1973, Ser. No. 388,538

Int. Cl. C08d *3/04, 3/08, 3/12*

U.S. Cl. 260—94.2 M 6 Claims

In the polymerization of liquid diene monomer catalyzed by a lithium alkyl to produce a high-vinyl butadiene

polymer, dimethyl ether is used to serve as a polar catalyst modifier for high-vinyl production and also as the auto-refrigerant to remove the heat of polymerization. While dimethyl ether is generally not regarded as a suitable polar component for this purpose, it is found to be ideally suited as the polar component under the conditions described herein and also particularly effective in controlling the polymerization temperature under the pressure and temperature conditions found to be suitable, namely no more than 100° F. (38° C.), advantageously no more than 80° F. (27° C.), preferably about 40° F. (5° C.), and pressures of about 25, 65, and 90 p.s.i.g. respectively for those corresponding temperatures.

28,048

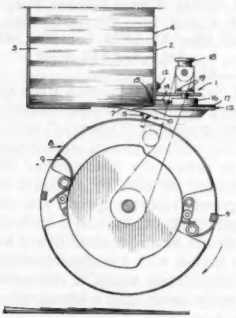
APPARATUS AND METHOD FOR SEPARATING SIGNATURES IN A GATHERER

Carlton V. Hageman and Victoriano F. Rana, Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Original No. 3,650,525, dated Mar. 21, 1972, Ser. No. 45,010, June 10, 1970. Application for reissue Mar. 16, 1973, Ser. No. 342,292

Int. Cl. B65h *3/08, 3/50*

U.S. Cl. 271—101 **15 Claims**



A signature gathering machine having an improved rotary lifter separator for separating and deflecting the lowermost signature of a stack of signatures in a stack hopper for extraction therefrom while continually supporting the forward edges of the signatures in the stack thereby reducing pressure and friction on the lowermost signature being extracted and reducing the possibility of the next lowermost signature following the signature being extracted. The rotary lifter separator comprises a disk-like rotary separator having a leading edge which rotates into the stack between a detached lowermost signature and the stack and separates and positions the forward edge of the lowermost signature whereupon it is gripped by a rotary drum mechanism and pulled in an extracting direction from the stack. The periphery of the upper surface of the disk-like rotary separator continually supports the forward edges of the signatures in the stack as the separator rotates. Additionally, a stack support means supports the forward edges of a portion of signatures in the stack thereby further reducing the pressure and friction on the lowermost signature. A controlling means cyclically releases the support to the portion of signatures permitting them to settle towards the bottom of the hopper.

28,049

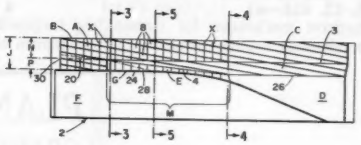
THREAD ROLLING DIE WITH STABILIZING PORTION

Roger W. Orlomoski, Paxton, Mass., assignor to Litton Industrial Products, Inc., Holden, Mass.

Original No. 3,538,740, dated Nov. 10, 1970, Ser. No. 717,700, Apr. 1, 1968. Application for reissue July 20, 1972, Ser. No. 273,476

Int. Cl. B21h *3/06*

U.S. Cl. 72—469 **5 Claims**



This invention is directed to thread rolling dies of the type capable of producing gimlet pointed screws from headed cylindrical blanks. When the screw is relatively short, having only one to a few turns of the thread on the body, it is often difficult to start the blank properly between the dies. Accordingly, in this invention the vertical portions of the dies at the leading ends are widened to provide enough thread grooves to insure initial stabilization of the blank in proper rotating attitude before the blank reaches the conventionally sized pointing and slug producing portions of the dies.

28,050

SULFUR-VULCANIZABLE ELASTOMERIC COPOLYMERS OF ETHYLENE, PROPYLENE AND ALIPHATIC DIOLEFINS, AND A PROCESS FOR PREPARING SAME

Giulio Natta and Giorgio Mazzanti, Milan, Italy, and Giorgio Boschi, Brussels, Belgium, assignors to Montecatini Edison, S.p.A., Milan, Italy

No Drawing. Original No. 3,280,082, dated Oct. 18, 1966, Ser. No. 668,853, July 1, 1957. Application for reissue Mar. 16, 1973, Ser. No. 342,083, which is a continuation of reissue application Ser. No. 12,899, Feb. 17, 1970, which is a continuation of reissue application Ser. No. 769,452, Oct. 11, 1968, both now abandoned.

Claims priority, application Italy, July 11, 1956, 10,680/56

Int. Cl. C08f *1/34, 15/40*

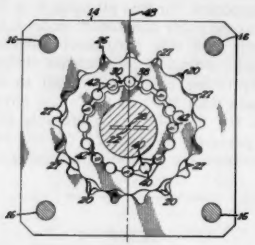
U.S. Cl. 260—80.7 **6 Claims**

6. A process for producing sulfur-vulcanizable, elastomeric, essentially amorphous, linear, high molecular weight terpolymerizates of an aliphatic conjugated diolefin hydrocarbon containing 4 to 6 carbon atoms in which at least one double bond is in a terminally located vinyl group, with ethylene and propylene, which comprises contacting, under polymerizing conditions, a mixture of ethylene, propylene and said diolefin, with a halogen-containing polymerization catalyst prepared from a hydrocarbon-soluble vanadium compound and an organoaluminum compound, in a liquid polymerization medium which

is an inert solvent for said vanadium compound, the amount in said mixture of propylene, in mols, being greater than the amount of ethylene and the amount of said diolefin being predetermined to result in a terpolymer in which, in essentially all macromolecules forming the same, the diolefin units, while being present in a proportion such that the double bonds thereof are readily discernible in the terpolymer, account for less than 20% of the total units forming the macromolecules, to produce said terpolymerizates.

28,051
TORQUE TRANSMITTING DEVICE
Hugh L. McDermott, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio
Original No. 3,389,618, dated June 25, 1968, Ser. No. 549,240, May 11, 1966. Application for reissue Apr. 9, 1970, Ser. No. 27,191
Int. Cl. F01c *21/00;* **F16d** *3/04;* **F16h** *1/28*
U.S. Cl. 418—61 **4 Claims**

A drive mechanism for transmitting torque between two relatively orbital members, the mechanism comprising a plurality of circumferentially arranged articulated holes, with each hole being formed partly in one member and partly in the other, and a like number of rollers respectively and loosely disposed in the articulated holes.



PLANT PATENTS

GRANTED JUNE 18, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,571
ROSE PLANT
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Jan. 8, 1973, Ser. No. 321,717
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its dark semi-glossy, abundant foliage; vigorous, upright habit of growth; Maize Yellow bud color which, upon exposure to sunlight, changes into a deep Chrysanthemum Crimson.

3,572
AZALEA PLANT
Samuel L. Coffin, W. Four Ridge Road, House Springs, Mo. 63051
Filed Apr. 23, 1973, Ser. No. 353,602
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—56 **1 Claim**

A new variety of azalea, of the Kaempferi type, characterized by its more upright growth habit as compared with its seed parent Fedora (unpatented), its complete lack of seed production, and its resultant heavy blooming during each flowering season.

3,573
CARNATION PLANT
Osamu Ham Honda, Redwood City, Calif., assignor to Woodside Nurseries Company, Redwood City, Calif.
Filed Apr. 4, 1973, Ser. No. 347,866
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—73 **1 Claim**

A new variety of red carnation plant of the large flowered greenhouse forcing or perpetual blooming type, characterized by the unique coloring of its blossoms which substantially duplicates that of the flower of the "Forever Yours" rose (P.P. 2,443).

3,574
CACTACEAE PLANT FAMILY
Barnell L. Cobia, Winter Garden, Fla., assignor to B. L. Cobia, Inc., Winter Garden, Fla.
Filed Mar. 13, 1973, Ser. No. 340,931
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—88 **1 Claim**

A new and distinct hybrid plant variety of the Cactaceae family obtained through cross-pollination of a plant of the *Zygocactus truncatus* "Delicatus" variety and a *Zygocactus truncatus* variety known commercially as "Christmas Cheer" is principally distinguished from its parents and known related varieties by a growth habit that combines a fast growth rate, an upright and compact appearance, thin cladophylls with from 6 to 9 teeth per cladophyll, and a flower having a small ovary with a high sterility factor, a bloom with translucent white perianth tube forming and laminating tepals, a carina which is clearly demarcated by its color, and a bloom life of from about 6 to about 8 days.

3,575
ILEX (HOLLY) PLANT
Armand V. Motsinger, Aberdeen, Md. (140 W. 4th St., Windmill Village, North Fort Myers, Fla. 33903)
Filed June 22, 1971, Ser. No. 155,492
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct plant variety of the evergreen tree type; substantially as herein described and illustrated; resulting from an attempted crossing of a Viburnum and an Ilex plant, with most characteristics including alternate branches and leaves resembling the *Ilex opaca,* but with some branches and some leaves nearly opposite, and characterized particularly as a novelty by its rapid growth; attractive red berries spread evenly among green leaves; upper middle branches extending from either side of the trunk at approximately 45 degrees giving the appearance that they extend at right angles to each other; and the entire tree having an attractive upright pyramidal shape, with profuse foliage and berries.

PATENTS

GRANTED JUNE 18, 1974

GENERAL AND MECHANICAL

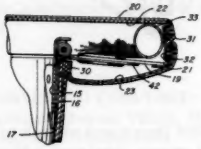
ERRATUM

For Class 2—48 see:
Patent No. 3,818,158

3,816,852
UNIFORM CAPS

Bernard Weinstein, Newton, Mass., assignor to Bancroft Cap Company, Framingham, Mass.

Filed Apr. 12, 1973, Ser. No. 350,387
Int. Cl. A42b *1/00, 1/20*
U.S. Cl. 2—195 **2 Claims**

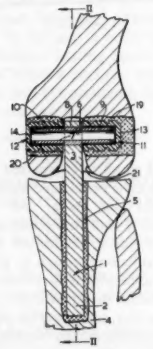


An improvement is provided in uniform caps which have a stiff band constructed and arranged to fit the head of a user, a non-self-supporting cover, a visor and a flaring crown portion. The flaring crown is normally held in a raised position in use by a front stay. A hinge interconnects the band and the stay with the hinge having a stop which limits a stretched cover condition with the peak of the crown raised while permitting hinge pivoting to define a collapsed peak position of the crown for ease of storage and shipment.

3,816,853
IMPLANTABLE PROSTHETIC KNEE JOINT

Reginald Arnold Elson, Woodsetts House, Woodsetts, Worksop, Nottinghamshire, England

Filed Nov. 16, 1972, Ser. No. 307,170
Claims priority, application Great Britain, Nov. 18, 1971, 53598/71
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **7 Claims**

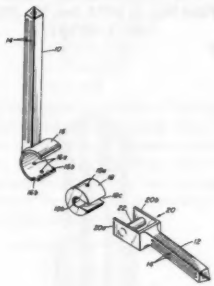


A prosthetic knee joint comprising a tibial member having a stem for insertion into, and securing to, the tibia, and spindle means at the end of the member opposite to the stem, the spindle means extending transversely to the stem; and two bearing bushes designed for anchorage in femoral condyles to extend laterally of the knee, the bearing bushes pivotally supporting opposite ends of the spindle means.

3,816,854
PROSTHESIS FOR TOTAL ARTHROPLASTY OF THE ELBOW JOINT

Allen P. Schlein, 205 Booth St., Stratford, Conn. 06497

Filed July 3, 1973, Ser. No. 376,220
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **9 Claims**

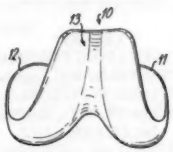


A prosthesis for total replacement arthroplasty of the elbow joint consists of a hinge joint having two intramedullary stems adapted for insertion into the medullary canals of the humerus and the ulna respectively, and which is articulated at the time of operation. The free end of one of the stems is formed with an integral partial cylinder within which is secured a cylindrical bearing member formed of ultra high density polyethylene having an axial bore for receiving a pivot pin carried on the free end of the other stem. A radial slot in the bearing member, of a width slightly less than the diameter of the pivot pin, allows the pin to be snapped into the bore of the bearing member to form the hinge joint.

3,816,855
KNEE JOINT PROSTHESIS

Bahaa Botros Seedhom Saleh, Leeds, England, assignor to National Research Development Corporation, London, England

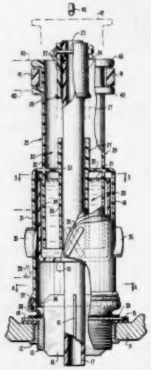
Filed May 30, 1972, Ser. No. 257,910
Claims priority, application Great Britain, June 1, 1971, 18278/71
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 **9 Claims**



A prosthetic knee joint device comprises a femoral component in the form of a shell member having two condylar por

tions with major convex bearing surfaces areas, which portions are bridged at one end by a portion defining a trough between the convex areas. An associated tibial component has similar portions in a platform bearing member defining major concave bearing surface areas and a ridge therebetween. The convex bearing areas are longer than the concave bearing areas and generally U-shaped longitudinally to simulate the corresponding shaping in the natural joint from which the shell member can in fact be derived. The concave bearing areas however simulate the menisci of the natural joint different phases of rotation to provide an optimized congruity between the bearing surfaces during rotation of the predetermined geometry of the prosthesis as compared to the variable geometry in the natural joint.

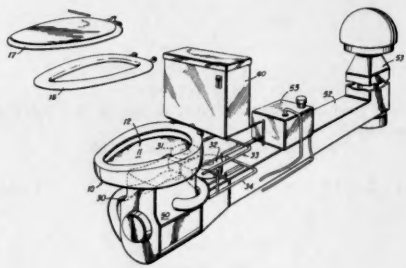
3,816,856
FLUSHING APPARATUS
James W. Braswell, 218 Hooker Rd., Wilmington, N.C. 28401
Filed May 2, 1973, Ser. No. 356,474
Int. Cl. E03d *1/34*
U.S. Cl. 4—58 **11 Claims**



A flushing apparatus particularly for plumbing fixtures embodies one main moving part which is adapted alternately to receive ballast water for closing a main flush valve and to become a float to assist in the opening of the flush valve after release of the ballast water. The main flush valve is directly attached to the one main moving part. Manual force may be utilized to implement the opening of the flush valve without complete reliance on flotation, and existing conventional tank handles and levers may be utilized. The main flush valve may also be closed manually to effect partial flushing for the sake of saving water.

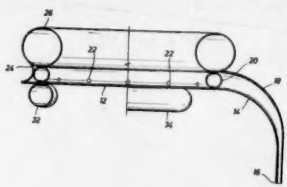
3,816,857
INCINERATING COMMODE
James I. West, Jr., 7856 Feilder Rd., Jonesboro, Ga. 30236
Continuation-in-part of Ser. No. 134,650, April 16, 1971. This application Sept. 15, 1971, Ser. No. 180,560
Int. Cl. E03d *1/02*
U.S. Cl. 4—131 **10 Claims**

A comminuting attachment for an incinerating commode operable for disposing of human waste. The incinerating commode includes a commode body having seat means operatively associated therewith whereby the commode can be used for receiving wastes deposited by humans. A combustion chamber is located below and operatively associated with the commode body whereby human waste can fall by gravity into the commode body and into the combustion chamber. The combustion chamber includes comminuting means operatively associated therewith for reducing the particle size of waste



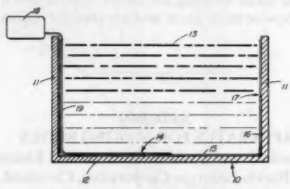
material deposited therein and which is to be incinerated by heat producing means developed within the combustion chamber. The incinerating commode is cyclically operable and includes blower means for cooling and purging the by-products of combustion from the combustion chamber after an incinerating operation.

3,816,858
INFLATABLE HAIR WASHING AID
Marie Martin, 699 Ridgewood Dr., Apt. 109, Port Neches, Tex. 77651
Filed Mar. 16, 1973, Ser. No. 342,287
Int. Cl. A47k *3/12*
U.S. Cl. 4—159 **9 Claims**



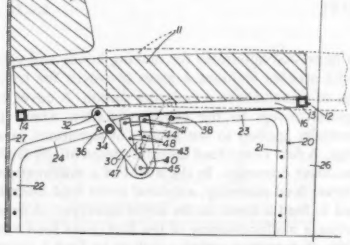
A hair washing aid which is comprised of an inflatable ring of substantial size which is positioned above a bottom member which spans across the ring. An intermediate ring therebetween defines a wall immediately above the bottom and the intermediate ring is perforated at a number of locations to serve as a collecting trough or gutter for water. The device is preferably used with bed-ridden patients in hospitals and the like. To maintain the apparatus level when a patient's head is placed in the ring, an inflatable pillow is incorporated which can be inflated immediately beneath the neck of the patient to level the bottom. Water accumulated in the bottom is drained through an attached down-chute which is of sufficient length to extend over the side of the bed. The down-chute has a lower end which is open but which is adapted to be closed by a clip which serves as a valve.

3,816,859
POOL COVERS
Michael Mosehauer, 125 Nichols St., Spencerport, N.Y. 14559
Filed Mar. 8, 1973, Ser. No. 339,441
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172.12 8 Claims



A storable pool cover which serves as a pool liner when not in use and which has an inflatable portion that functions as the cover when inflated.

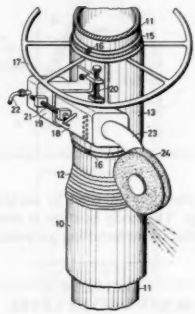
3,816,860
CONVERTIBLE SEAT-BED
Howard M. Quakenbush, Monona Village, Wis., assignor to Flexsteel Industries, Inc., Dubuque, Iowa
Filed Sept. 27, 1972, Ser. No. 292,486
Int. Cl. A47c *19/00; 13/00*
U.S. Cl. 5—17 5 Claims



Convertible seat-bed wherein a movable seat-carrying frame is connected by links to a main frame for movement between rearward inclined seating position in which the rear portion of the seat is below a backrest and a forward sleeping position in which the seat is horizontal, the links being moved over-center between the two positions.

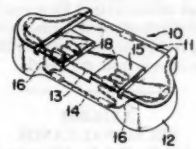
3,816,861
MEANS FOR GRINDING THE SURFACE OF WELDING SEAM INTERCONNECTING TWO TUBULAR MEMBERS
Nils Ake Curt Jungle, and Nils Rune Janred, both of Goteborg, Sweden, assignors to Aktiebolaget Gotaverken, Goteborg, Sweden
Filed Sept. 26, 1972, Ser. No. 292,350
Claims priority, application Sweden, Nov. 8, 1971, 14200/71
Int. Cl. B24b *19/00*
U.S. Cl. 51—241 S 1 Claim

When interconnecting two concentrically arranged tubes, of which the inner one extends beyond the end of the outer one the welding seam will cover at least a substantial part of the end of the outer tube and then conically taper into the inner tube. When many such tube combinations are arranged in close relationship certain difficulties are encountered in grinding the surface of the individual welding seams, which is desirable out of consideration to the resistance to flow of a fluid passing outside the tubes and also for inspecting the quality of the welding seams.



The grinding is performed by means of an apparatus comprising a sleeve, upon which a grinding wheel and driving means for the same are mounted, the sleeve being carried by two rings releasably attached to the inner tube. The rings can be fixed in an arbitrary position along the tube and the sleeve is provided with means for adjusting the position of the grinding wheel axially as well as radially.

3,816,862
SEAT
Masaharu Shibata, Nagano, and Kunio Sato, Toyota, both of Japan, assignors to NHK Spring Co., Ltd., Yokohama-shi, Japan
Filed Dec. 26, 1972, Ser. No. 318,660
Claims priority, application Japan, Dec. 29, 1971, 47-2038; Jan. 31, 1972, 47-12921
Int. Cl. A47c *23/04, 25/00*
U.S. Cl. 5—351 8 Claims

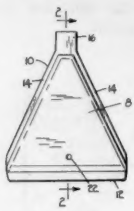


A seat is prepared by molding a synthetic resin foaming material integrally with a frame structure embedded therein. The frame structure includes an upper line frame extending along the upper outer periphery of the seat, a lower line frame connected to the upper line frame and supporting springs for resiliently supporting the upper line frame from below against the load of an occupant.

3,816,863
MULTIPURPOSE SKI TOOL
Rudolf H. Thielemann, Jr., P.O. Box 43, Sweet Home, Oreg. 97386
Continuation-in-part of Ser. No. 156,012, Aug. 25, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,601
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 R 2 Claims

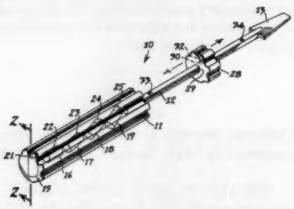
A tool having a plastic body portion with side metal edges and a metal tip. The tip and the side metal edges are shaped to

be usable as a screwdriver. The side metal edges can also be used as a scraper. The body portion at the end opposite from the tip comprises a scraping edge. This latter edge is a part of



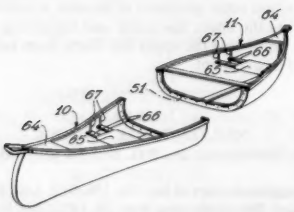
the plastic body and can be used to scrape surfaces which metal may damage. The body portion is constructed of resin or plastic for structural and handling purposes.

3,816,864
SCREWDRIVER LEVEL
Ashby M. Cotter, Walker St., Manchester, Tenn. 37355
Filed Feb. 5, 1973, Ser. No. 329,745
Int. Cl. B25f 1/00; G01c 9/28
U.S. Cl. 7—1 M **5 Claims**



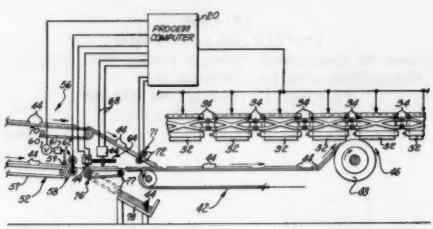
A screwdriver having a transparent handle and a plurality of bubble-level cavities spaced apart within said handle and at different angles to the longitudinal axis of the screwdriver. The tool is further characterized by a rest member slidably mounted upon the shank of the screwdriver and adapted to be locked in an inoperative position against the handle and an operative position remote from the handle.

3,816,865
SECTIONAL CANOE
Robert O. Ragan, 134 W. 49th St., Minneapolis, Minn. 55409
Filed May 4, 1972, Ser. No. 250,381
Int. Cl. B63b 7/04
U.S. Cl. 9—2 S **1 Claim**



A canoe is formed of two separable sections which may be disconnected for use in travelling, storage and handling. The canoe sections include an inner keel, an angularly curved bow or stern piece, outwardly bowed gunwales connected at one end to the top of the curved piece, and an abutment flange connecting to the other ends of the outwardly bowed gunwales. The body is formed of foam plastic, honeycombed paper or the like, the foam plastic being perforated. The body is preferably covered with fiberglass or the like. An outer keel and bow and stern forming members oppose the inner keel and curved bow or stern piece and are secured thereto.

3,816,866
APPARATUS FOR MAKING BOOKS
Leonard Miaskoff, and David A. Reed, both of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed May 7, 1973, Ser. No. 357,608
Int. Cl. B42c 11/00
U.S. Cl. 11—3 **7 Claims**

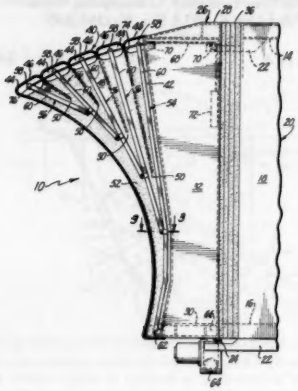


An improved apparatus for making books and other sheet material articles includes a main conveyor for transporting groups of signatures to a covering station. A cover conveyor transports covers to the covering station where they are sequentially applied to the groups of signatures in a known manner. A first cover feed assembly sequentially feeds covers to the cover conveyor. In the event of a malfunctioning of a first cover feed assembly, a second cover feed assembly is activated to feed a cover to the cover conveyor. A detector for detecting a malfunctioning of the first cover feed assembly is capable of detecting either a failure to feed a cover or the feeding od double covers. In the event that double covers are fed, the double covers are rejected and the second cover feed assembly is activated.

3,816,867
INFLATABLE CANOPY
Paul P. Shirzad, Palos Verdes Peninsula, and David L. Reidt, Lomita, both of Calif., assignors to Foremark Corporation, Gardena, Calif.
Filed June 23, 1972, Ser. No. 265,734
Int. Cl. B65g 11/00
U.S. Cl. 14—71 **17 Claims**

An inflatable canopy which is primarily intended to be utilized in at least partially enclosing the space between an aircraft loading bridge and an aircarft can be constructed utilizing an inflatable member divided up into interconnected internal sections so that when the member is inflated, the inflatable member will flare outwardly from an essentially flat folded position to an inflated position corresponding to the shape of an aircraft hull. A frame means for supporting the sections of the inflatable member in both the folded and inflated positions

is provided along with a counterweight folding means for moving the canopy from the inflated position to the folded position. The inflatable member is preferably mounted on a frame



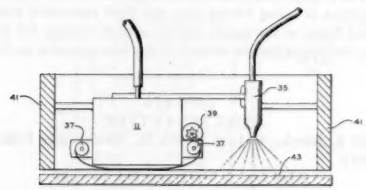
body pivotally connected to an aircraft loading bridge. This frame body may be spaced from the bridge; the space between it and the bridge may be enclosed by a bellows.

3,816,868

GLASS CLEANING APPARATUS

Martin Dotsko, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,337
Int. Cl. A47l 7/06
U.S. Cl. 15—4 **19 Claims**



A method and apparatus for cleaning glass and other optical surfaces in which a cleaning fluid is applied and then picked up by lightly passing over the surface a vacuum pickup device comprising a tank containing a cellular sponge and covered on one open side which is passed over the surface, with non-abrasive material, the tank having a vacuum applied to it. Various modifications are shown including a combined apparatus for applying and picking up the fluid and an apparatus supported on an air bearing table for use when no surface contact can be tolerated.

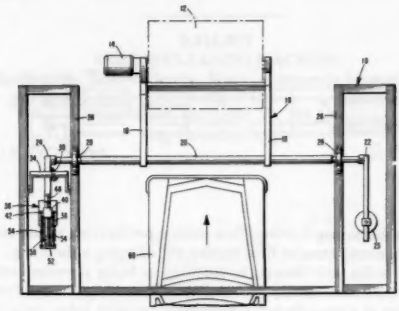
3,816,869

VEHICLE OVERHEAD WASHING APPARATUS

George Thomas Ennis, 1354 E. State St., Sharon, Pa.

Filed Apr. 4, 1973, Ser. No. 347,554
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D **8 Claims**

Apparatus for washing the upward facing surfaces of a vehicle, including a power driven rotary brush assembly which has a horizontal axis and is carried by a pivoted overhead assembly whereby the brush assembly may pivot upwardly to permit the vehicle to pass underneath while the brush engages and washes the upward facing surfaces of the vehicle. The brush carrying assembly includes a pair of brush carrying arms pivotally attached to support members and a pair of counterbalancing arms extending away from the pivot points in a direction generally opposite the direction of extension of the



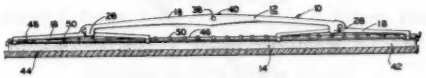
brush carrying arms. One of the counterbalancing arms is provided with a mechanism which is adapted to provide a variable counterbalancing force such that the downward force on the brush is made maximal when the arm and brush are in a lowered rest positon and is made minimal when the arm and brush are in a raised position.

3,816,870

WINDSHIELD WIPER BLADE

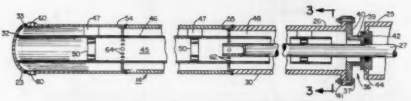
William C. Riester, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,613
Int. Cl. B60s 1/04
U.S. Cl. 15—250.42 **9 Claims**



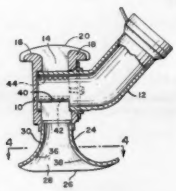
A unitized superstructure for a wiper blade comprises an integrally formed articulated structure consisting of a central primary span and a pair of secondary spans connected at each end of the primary span. The primary span is channel-shaped in cross section and includes planar extensions at its ends which connect the secondary spans at their centers to the primary span. Adjacent each end of the primary span are a pair of depending tabs which embrace a portion of the secondary spans. The superstructure is formed with the longitudinal axes of the secondary spans substantially perpendicular to the longitudinal axis of the primary span. The secondary spans while still pliable are rotated approximately ninety degrees into an operative angular relationship with the primary span and retained in that position by engagement of cooperating latch elements on adjacent spans. The planar end extensions on the primary span form flexible elastic connectors. A squeegee assembly comprises an elastomeric strip supported by a backing strip having a pair of longitudinal rails. At each end of the secondary yoke is a pair of opposed claws which slidably receive the backing strip.

3,816,871
SOOT BLOWER LANCE
George B. Karnofsky, Pittsburgh, Pa., assignor to Copes-Vulcan, Inc., Lake City, Pa.
Filed Aug. 4, 1972, Ser. No. 278,100
Int. Cl. F23j 3/00; F27d 23/00
U.S. Cl. 15—317 13 Claims



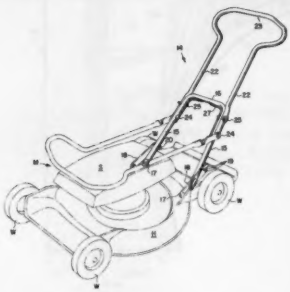
A tube having a central flow section for carrying a fluid and a concentric annular flow section for carrying a fluid, e.g., a lined boiler soot blower, is disclosed as being provided with means for maintaining the velocity of fluid in the annular flow section at a pre-selected substantially constant value, so as to minimize the pressure differential between the central flow section and the concentric annular flow section of the tube.

3,816,872
VACUUM CLEANER SUCTION TOOL FOR CLEANING DEEP PILE SHAG RUGS
Frank K. Bayless, 9 Garden City Rd., Darien, Conn. 06820; Horace W. Brundage, 277 Loveland; Robert A. Evans, 86 Mitchell, both of Stamford, Conn. 06902, and John W. Hoover, 49 Clark St., Milford, Conn. 06460
Division of Ser. No. 141,547, May 10, 1971, Pat. No. 3,745,603. This application Jan. 19, 1973, Ser. No. 324,976
Int. Cl. A47l 9/06
U.S. Cl. 15—397 4 Claims



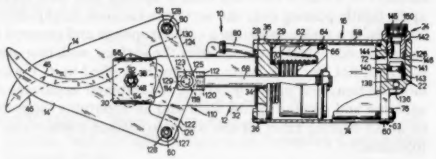
In accordance with the present invention there is provided a suction tool having a plurality of spaced narrow, hollow nozzles depending from the body of the tool and elongated in a horizontal direction parallel to the normal forward and backward horizontal movement of the tool. The lower surfaces or lips of these nozzles are curved upwardly at their opposite ends and the interior surfaces of the nozzles adjacent their opposite ends are convexly curved. The hollow nozzles communicate with the interior of the body of the tool, which in turn is connected through the usual hollow wand or handle and flexible hose with a source of suction in a vacuum cleaner unit. This construction enables the several nozzles to penetrate the deep pile of a shag rug by parting the fibers and thus the nozzle openings are brought fairly close to the base of the rug and the air flow into the nozzles is able to entrain deeply embedded dirt. The shape of the nozzles enables them to be moved with reasonable ease between and over the fibers and to comb out the fibers as the tool is moved.

3,816,873
FOLDING HANDLE AND LATCH ASSEMBLY
Richard A. Thorud, Bloomington; Henry B. Tillotson, III, and William D. Wood, both of Minneapolis, all of Minn., assignors to The Toro Company, Minneapolis, Minn.
Filed Aug. 6, 1973, Ser. No. 385,839
Int. Cl. B62b 3/02
U.S. Cl. 16—111 A 2 Claims



A folding handle for a rotary mower. The handle is composed of two similar inverted U-shaped sections, an upper and lower, with the lower section being attached to the mower housing, and with the upper section overlapping the lower section for a portion of its length, and being pivotally connected to the lower section. A unique latch mechanism locks both sides of the upper and lower handle sections together rigidly in the upright operative position, and is easily released by one hand of the operator to allow the upper section to be folded forward to a generally horizontal position over the engine. The latching mechanism includes two sliding pins biased outwardly by two spring-wire handles. The upper handle section includes ramps to engage and push inwardly the pins as the upper handle section is being swung into the rigid operative position. Aligned holes in the upper handle section engage the pins to secure the upper handle section to the lower handle section.

3,816,874
POULTRY CUTTER
Donald E. Jahnke, 6116 N. 115th St., Menomonee Falls, Wis. 53051
Filed Apr. 2, 1973, Ser. No. 347,180
Int. Cl. A22c 21/00
U.S. Cl. 17—11 8 Claims

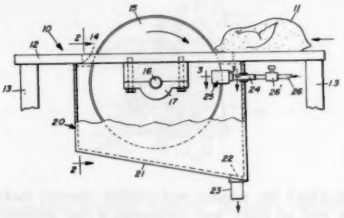


A hock and neck cutter having a pair of arcuate cutting blades pivotally mounted on the housing, a pneumatic piston and cylinder assembly mounted on said housing and a compound linkage assembly connecting said piston and cylinder assembly to said cutting blades to provide decreasing speed and increasing force in the movement of said blades. A low-force air valve is used to control the pressurization of the piston and cylinder assembly and a discharge air silencer is provided in the discharge passage of the piston and cylinder assembly.

3,816,875
MEAT CUTTING AND SLICING METHOD AND APPARATUS

William D. Duncan, and Carolyn L. Duncan, both of Kokomo, Ind., assignors to Duncan Creations, Inc., Marion, Ind.

Filed May 26, 1971, Ser. No. 147,038
Int. Cl. A22c 21/00
U.S. Cl. 17—52 5 Claims

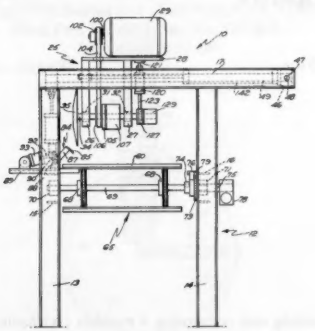


A meat cutting and slicing method and apparatus comprises the use of a circular knife blade rotated at high speed while the surface of the blade is bathed in a stream of cooling and/or cleaning fluid to provide a film of said fluid on the surface area of the blade in contact with the meat being severed.

3,816,876
FISH PROCESSING MACHINE

Oliver T. Barrette, Jr., 122 Jefferson St., and Lucien W. Carignan, 130 Pilgrim Pky., Apt. No. 7, both of Warwick, R.I. 02888

Filed July 12, 1972, Ser. No. 270,939
Int. Cl. A22c 25/16
U.S. Cl. 17—57 9 Claims

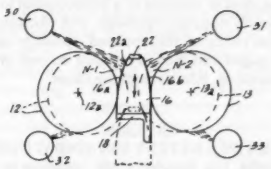


A fish processing machine having a stand, a rotary knife unit, a support unit for the rotary knife unit, having its one end pivotally attached to the top of said stand, and a conveyor tray unit having elongated trays positionably supported by the stand beneath the rotary knife unit. The elongated trays have a concave curvature in their upper surface to accept the curvature of the fish and the curvature of the rotary knife. At the forward end of the machine a pivotal clamp member extends over a portion of the elongated trays and it is automatically actuated to clamp the head of the fish securely to the tray during the cutting operation. The rotary knife unit comprises a rotary knife connected to a motor that intermittently rotates the knife first in the clockwise direction and then in the counterclockwise direction. A first air cylinder motor unit mounted on the stand is connected to the rotary knife support unit and it functions to raise and lower the rotary knife respectively from and toward the elongated trays. A second air cylinder motor unit is mounted on the rotary knife support unit with its piston rod connected to structure supporting the rotary knife such that its stroke back and forth causes the rotary knife to traverse the longitudinal axis of the tray. The conveyor tray unit comprises a plurality of elongated trays with the drive shaft for the conveyor being mechanically connected to a rotary motor that indexes the trays sequentially into position beneath the rotary knife.

3,816,877
SHRIMP CLEANING MACHINE

Kenneth W. Bullock, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Nov. 3, 1971, Ser. No. 195,192
Int. Cl. A22c 29/00
U.S. Cl. 17—73 20 Claims

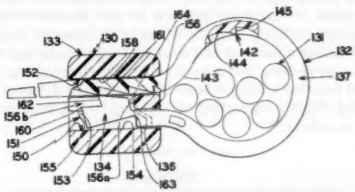


A machine and method for cleaning marine life such as shrimp by passing the shrimp down between spaced peeling rolls having a vertically reciprocating plate therebetween with the rolls on movable centers positioned as a function of the plate shape and position with the plate having shaped sides with a traveling belt moving over the top edge of the plate for carrying away the cleaned shrimp and the rolls having an outer surface of a predetermined hardness and material and rotating at a predetermined speed with the plate vertically reciprocating at a predetermined speed and a spray provided for cleaning the rolls and plate and forcing uncleaned shrimp into the nips between the rolls and plate.

3,816,878
CABLE TIE

Ronald T. Fulton, Tinley Park, and Evan D. Roberts, Flossmoor, both of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Nov. 10, 1971, Ser. No. 197,325
Int. Cl. B65d 63/00
U.S. Cl. 24—16 PB 4 Claims

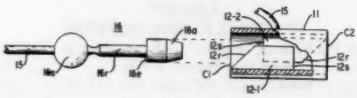


A two-piece cable tie having a separate strap and a separate strap retaining and locking head is disclosed herein. The strap is threadably assembled through the head and is insertable back through the head to form a bundling loop. A pawl is pivotally secured to the cable tie and extends into one-way ratcheting and locking engagement with abutments on the strap positioned within the head.

3,816,879
FILAMENTARY STRING FASTENER

Francis G. Merser, Framingham Centre, and Philip A. Kooistra, Northbridge, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Oct. 4, 1972, Ser. No. 294,854
Int. Cl. B65d *63/00*; A44b *9/00*
U.S. Cl. 24—16 PB **12 Claims**

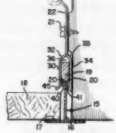


A fastener formed by an elongated member, such as a filamentary string, that is attached to a bidirectional locking head with longitudinally opposed openings. The elongated member is inserted into either of the opposed openings of the head, where it is engaged and locked in place by one or more longitudinally extending, internal locking vanes.

3,816,880
MULTIPLE DETENT RETAINING CLIP

Arthur F. Jacobs, Los Angeles, Calif., assignor to Prudential Lighting Corporation, Los Angeles, Calif.

Filed Dec. 4, 1972, Ser. No. 311,631
Int. Cl. A44b *21/00*; F21s *1/02*
U.S. Cl. 24—73 B **9 Claims**



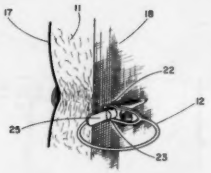
A multiple detent retaining clip having a planar body portion which is adapted to be secured to the sheet metal housing of, for example, a lighting fixture which is a portion of a suspended ceiling so as to support the lighting fixture from inverted T-bars forming a part of a grid type suspended ceiling, the clip having three planar gripping legs which are integral with the body portion extending in the same general direction, the gripping legs at opposite ends being laterally offset from the plane of the body portion in one direction and other gripping legs being laterally offset in an opposite direction so as to define a channel and each of the gripping legs having a detent projecting inwardly so that the gripping legs may be fitted over the enlarged head of the inverted T-bar of the grid ceiling thereby supporting the lighting fixture from the ceiling grid members.

3,816,881
ONE PIECE UPHOLSTERY TUFTING BUTTON

Richard W. Van Riper, Jr., Crawfordsville, Ind., assignor to Ingress Manufacturing Company Incorporated, Crawfordsville, Ind.

Filed July 12, 1973, Ser. No. 378,567
Int. Cl. A44b *1/18*
U.S. Cl. 24—90 W **8 Claims**

A one piece tufting button for use in securing upholstery. The tufting button main body has a button head formed at one end and an opposite pointed end for allowing insertion of the button main body through the upholstery. In one embodiment, a plurality of holes are formed in the main body at a portion of the main body nearest the button head. The pointed end is extended through the upholstery and then looped toward the button head so as to extend through one of the holes. A groove formed in the pointed end engages the periphery of the hole

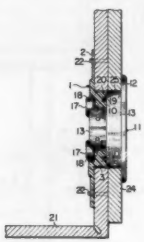


through which the pointed end extends thereby locking the pointed end in place and compressing the upholstery the desired amount. In another embodiment, a plurality of grooves are formed in a portion of the main body nearest the button head. A bifurcated wall adjacent the pointed end extends around one of the grooves thereby securing the pointed end in position.

3,816,882
CLAMPING UNITS FOR USE IN PACKAGING

Kazuya Maeda, and Sigemi Fujiwara, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 20, 1971, Ser. No. 210,019
Claims priority, application Japan, May 14, 1971, 46-32843; June 3, 1971, 46-38873; July 29, 1971, 46-57359; Sept. 23, 1971, 46-74365; Sept. 23, 1971, 46-74366
Int. Cl. F16b *21/02*
U.S. Cl. 24—221 R **2 Claims**

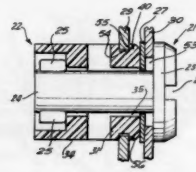


A clamping unit comprising a member (A) having a cylindrical portion adapted to be inserted into a through-hole formed in a wall of a packaging box, a flange portion adapted to be closely fitted over the peripheral edge of said through-hole, an axial through-hole and grooves circumferentially formed in the end surface of said cylindrical portion or the front surface of said flange portion along the peripheral edge of said through-hole; and a member (B) having a cylindrical portion adapted to be inserted into a through-hole formed in the confronting wall of another packaging box, a flange portion adapted to be fitted over the peripheral edge of said through-hole, engaging projections adapted to be inserted into the axial through-hole of said member (A) and locking means adapted to elastically engage the end surface of the cylindrical portion or the inner peripheral surface of the axial through-hole of said member (A), said member (B) being inserted into said member (A), whereby the locking means of said member (B) are strongly elastically forced into the grooves of said member (A) and said member (A) is disengageably positively secured to said member (B).

3,816,883
FASTENER

Theodore Dzus, Sr., and Peter Schenk, both of West Islip, N.Y., assignors to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Jan. 4, 1973, Ser. No. 320,882
Int. Cl. A44b 17/00
U.S. Cl. 24—221 R 6 Claims

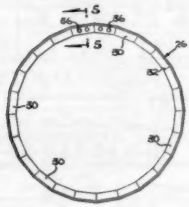


A quick release fastener used for fastening together two parts such as panels. The fastener consists of two components, a stud and a receptacle. The receptacle is molded from a resilient plastic material and includes two C-shaped supporting webs terminating at one end in engagement with an integral base portion and at the other end in engagement with a retaining portion. The retaining portion has a socket with cam surfaces to cooperate with lugs on the stud. The resilient member is collapsible laterally to permit its partial insertion in an aperture on a support and designed so that when it is released it will return to its initial configuration affixing the receptacle to the support. The relationship between the base and the C-shaped loops is dimensionally adjusted so that the receptacle is adapted to be mounted in a variety of different thickness panels.

3,816,884
SELF-SHAPING SUPPORT FOR FLEXIBLE MATERIALS

Henry Levor, 7756 Burnet Ave., Van Nuys, Calif. 91405

Filed Feb. 22, 1972, Ser. No. 227,869
Int. Cl. A44b 21/00
U.S. Cl. 24—243 CC 10 Claims

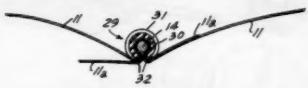


A self-shaping support for the mechanical support of flexible materials, such as tubular shaped fabric members used for filtration tubes. The support may be comprised of a T-shaped extruded member having a plurality of notches cut in the leg of the T and a plurality of slots punched in each side of the top of the T-shaped member. The support may be sewn to the fabric in the flat condition by stitching through the plurality of slots punched in the top of the T and later rolled into a closed shape by bending so as to close at least a portion of the notches in the leg. A special clip is disclosed for retaining the ends of the support, one with respect to the other. Thus, the fabric tube may be sewn into a shape of a conduit by a longitudinal stitch and the support bent and locked in the desired configuration as each support is approached during the longitudinal sewing operation.

3,816,885
MECHANICAL JOINING OF FLEXIBLE SHEET MATERIAL TO CONNECTING AND SUPPORTING CORELINES, FOR LARGE PANEL USES

Kolbjorn Saether, 934 Linden, Wilmette, Ill. 60091

Filed Feb. 3, 1972, Ser. No. 223,192
Int. Cl. A44b 21/00; E04b 1/345
U.S. Cl. 24—243 K 25 Claims

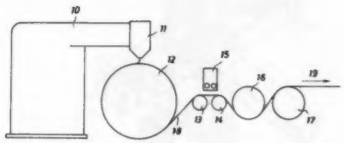


Flexible sheet material is attached to coreline (i.e., rod, rope, cable), either to splice sheet margins into a composite of larger span, or to attach a large sheet to a plurality of supports some of which may be at intermediate points of the sheet, or merely to support ends or side margins of a sheet, by releasably clamping the sheet material to the coreline by means of split tubing of friction material held thereto by split relatively rigid tubular retainer. Joined sheet margins are thereby connected in airtight relation. Releasable securing of flexible strips or panels into sheets usable for various purposes, and supporting of the sheets and carrying of the sheets as in air-supported enclosures is facilitated. Erection and dismantling of air-supported enclosures is simplified.

3,816,886
APPARATUS FOR LONGITUDINALLY STRETCHING FILM

Jan Baptist Van Cappellen, Berchem, Belgium, assignor to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Oct. 29, 1971, Ser. No. 193,706
Claims priority, application Great Britain, Oct. 30, 1970, 51780/70
Int. Cl. B29d 7/24; D06c 3/00
U.S. Cl. 26—68 5 Claims



Apparatus for the molecular orientation of a polymeric film in the longitudinal direction, in which the film is pulled over two rotatable film supporting rollers which are closely spaced from each other and the first of which is heated and the second of which is cooled, the film is heated by an infrared heater which is located close to the rollers at the side of the film which is remote of the rollers, and in which the film is subjected to opposed tensional forces in order to stretch it longitudinally on its path from the first to the second roller.

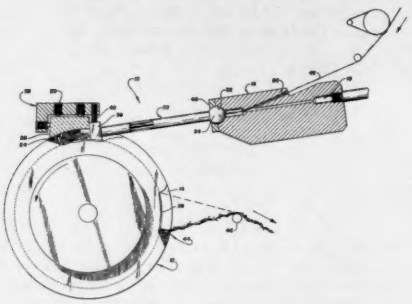
3,816,887
SWIVELLY MOUNTED TAILPIPE FOR THE JET DEVICE OF A YARN BULKING APPARATUS

Glen C. Smith, Kingsport, Tenn., and Carson E. Williams, Gate City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 17, 1972, Ser. No. 272,536
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 2 Claims

In a bulking apparatus for crimping thermoplastic continuous filament yarn a bulking jet device is provided with a

swivelly mounted tailpipe through which yarn in crimp receptive condition is delivered from the jet device to a continuously forming porous plug of such yarn within the groove of a



rotating wheel. The delivery end of the tailpipe rides within and on the bottom surface of the groove, and the swivel connection enables the tailpipe to adapt to wheel wobble and any eccentricity of the wheel.

3,816,888

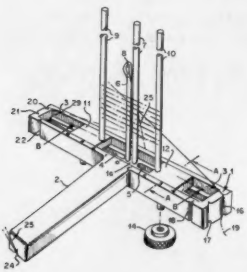
POMPON MAKING APPARATUS

James B. Rather, Jr., Birch Harbor, Maine, assignor to Schoolhouse Enterprises Ltd., Birch Harbor, Maine

Filed May 15, 1973, Ser. No. 360,548

Int. Cl. D04d *7/06*

U.S. Cl. 28—2 **16 Claims**



A device for making pompons, tassels or the like, includes a support member having first and second closely spaced rods extending therefrom. The closely spaced rods define a tying point for the pompon, or the like, and at least one of the closely spaced rods has a yarn engaging means thereon. Winding rods, for yarn or the like, are respectively provided on either side of the closely spaced rods and are adjustably mounted relative to the support member. A handle member extends from the support member to facilitate use of the device.

3,816,889

APPARATUS FOR PRODUCING A COILED THREAD PACKAGE

Renato Crotti, Modena, Italy, assignor to Eddybel S. A., Coira, Switzerland

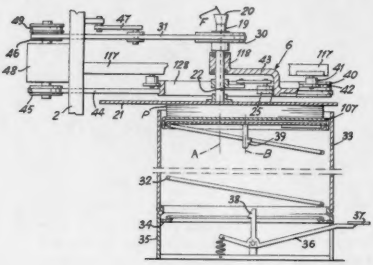
Filed Dec. 13, 1972, Ser. No. 314,522

Claims priority, application Italy, Dec. 20, 1971, 13095/71; Aug. 17, 1972, 12849/72; Sept. 22, 1972, 12906/72

Int. Cl. B65h *51/02, 55/00*

U.S. Cl. 28—21 **28 Claims**

A rotating base plate is provided having a vertical axis, onto which the coiled yarn package is formed. Said base plate is urged upwardly against a rotating depositing disc, the axis of rotation of which is eccentric with respect to the axis of rotation of the base plate. The depositing disc is carried by a rotating hollow shaft presenting an upper open end, and a radial bore in correspondence of its bottom end integral with the depositing disc. Integral in rotation with the depositing disc



there is provided a roller which is caused to bear against the inner track of a fixed ring. The yarn is withdrawn from a suitable supply, passes through the hollow shaft, out of the radial bore, between the roller and the track in their contact zone, and it is hence positively fed, through a bore provided in the depositing disc, onto the base plate, in loops progressing along an annular path, to form a coiled yarn package.

3,816,890

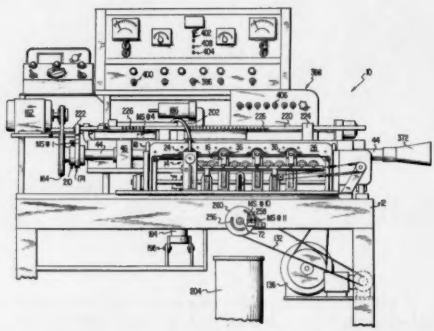
NON-CAPTIVE TOOL CHANGE MECHANISM

John A. Cupler, II, 10 Cupler Dr., Cumberland, Md. 21502

Division of Ser. No. 871,136, Sept. 4, 1969, abandoned, which is a division of Ser. No. 715,711, March 25, 1968, Pat. No. 3,478,419. This application Oct. 26, 1971, Ser. No. 192,669

Int. Cl. B23q *3/157*

U.S. Cl. 29—26 A **13 Claims**



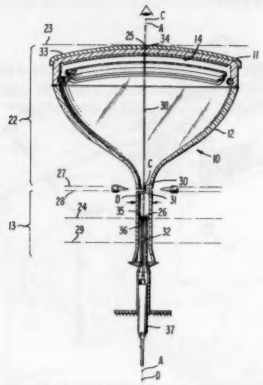
A mechanism for interchanging a plurality of non-captive tools between a tool support rack and a work station. An upwardly opening Vee bearing is provided at each work station for supporting a tool at two spaced locations intermediate the ends thereof. The tool support rack includes a pair of horizontally extending rails having aligned tool engaging recesses on the upper surfaces thereof, the rails engaging the tools at two spaced locations intermediate the ends thereof and offset from the Vee bearing support locations. Means are provided for effecting vertical and lateral movement of the support rack to effect tool transfer between the rack and the Vee bearing.

3,816,891

METHOD OF REBUILDING A CATHODE-RAY TUBE

Gardner Luther Fassett, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 31, 1973, Ser. No. 365,755
Int. Cl. H01j *9/18*
U.S. Cl. 29—25.13 7 Claims



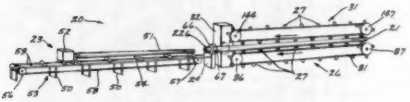
A bulb member and a neck are assembled using a confined light beam within the cathode-ray tube to visually define a central longitudinal axis of the tube. The visually-defined central longitudinal axis passes through a point at the geometric center of the viewing-screen structure and through at least one point on the central longitudinal axis of the neck.

3,816,892

TAPERED TUBE BURNISHING MACHINE

Thomas R. Karmann, Omaha, and Alton T. Adams, Arlington, both of Nebr., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Oct. 20, 1972, Ser. No. 299,254
Int. Cl. B24b *39/04*
U.S. Cl. 29—90 R 9 Claims



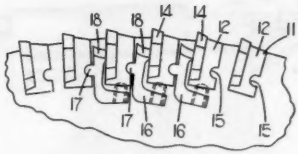
A burnishing machine for a tapered tube which holds the tube in place on a mandrel while also rotating the tube about its longitudinal axis, and wherein a pair of vertically spaced endless chains are provided which carry burnishing units traveling longitudinally of and in contact with the rotating tube, and with the upper burnishing chain unit hydraulically vertically movable relative to the lower burnishing chain unit for accommodating any normal taper of the tube, and further with the burnishing units spring loaded for coaction with the hydraulically loaded upper chain unit to obtain floating burnishing action against the tube.

3,816,893

MILLING CUTTERS

Malcolm Farrow, Coventry, Warwickshire, England, assignor to Wickman Wimet Limited, Coventry, England

Filed Apr. 13, 1973, Ser. No. 350,743
Claims priority, application Great Britain, Apr. 14, 1972, 17381/72
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 A 5 Claims



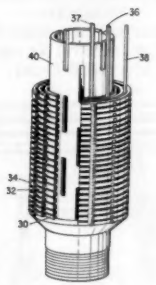
A milling cutter with spaced blades around its periphery, each blade carrying a detachable insert and the inserts being held on the blades by members which exert pressure between the adjacent blade and an insert, and screw means whereby the members can be adjusted to exert such pressure.

3,816,894

MULTI-LAYER WELL SAND SCREEN

George C. Howard, Tulsa, Okla., and William G. Bearden, deceased, late of Tulsa, Okla. (by Edith Mae Bearden, executrix), assignors to Amoco Production Company, Tulsa, Okla.

Division of Ser. No. 077,492, Oct. 2, 1970, Pat. No. 3,712,373.
This application Nov. 6, 1972, Ser. No. 298,152
Int. Cl. E21b *43/08*; B23p *15/16*
U.S. Cl. 29—163.5 F 7 Claims



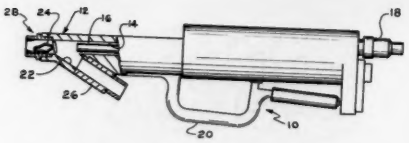
This is a special downhole multi-layer sand screen for oil and other fluids containing sand. The preferred embodiment of the sand filter includes an outer screen, an intermediate screen and an inner screen although another embodiment may have only an outer and an inner screen. The outermost screen is of larger spacing to retain only the coarser sand particles and the openings in the inner two screens are progressively smaller to retain the less coarse sand material. The coarser sand particles bridge about the larger openings in the outer screens and progressively finer sand materials bridge across the intermediate and inner screens.

3,816,895

CHUCK ASSEMBLY FOR FASTENERS

Donald E. Kuehn, Bay Village, and John Keith Lyon, Lorain, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 14, 1973, Ser. No. 341,066
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P 9 Claims



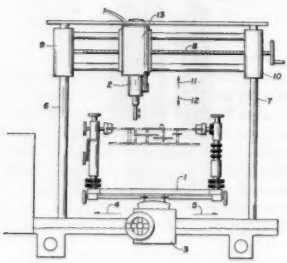
A chuck assembly for holding fasteners is provided. The chuck assembly includes an outer, back-up shield within which is a tubular chuck having fingers terminating near an end of the shield. The space between the chuck and the shield is filled with a resilient material such as urethane molded in place. The urethane resiliently supports the chuck fingers so that they can be made of a thinner and harder material than otherwise possible when the chuck fingers alone provide the gripping power and the necessary resiliency. Consequently, a longer wearing chuck can be obtained, and the fingers are less likely to crack under stress.

3,816,896

CLOCK REPAIR APPARATUS

Owen C. Horsfall, Northville, Mich., assignor to Raymond Lee Organization, Inc., New York, N.Y.; A part interest

Filed Apr. 30, 1973, Ser. No. 355,948
Int. Cl. B23p *19/00, 13/00, 7/00*
U.S. Cl. 29—200 P 4 Claims



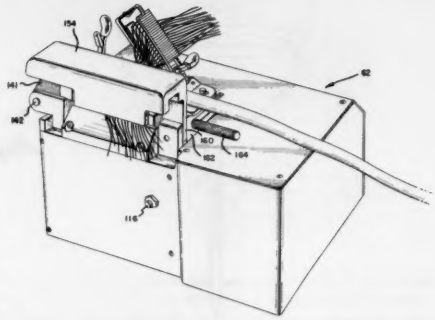
Clock repair apparatus comprises a platform for supporting a clock mechanism. An electrically driven tool for repairing a clock mechanism is movably supported in a manner whereby the tool and the platform are movable up and down and left and right relative to each other. A winding and unwinding device for winding and releasing tension in a clock spring is movably supported in a manner whereby the winding and unwinding device and the platform are movable up and down and left and right relative to each other.

3,816,897

APPARATUS FOR CONNECTING CONDUCTORS TO TERMINALS IN A PRE-LOAD ELECTRICAL CONNECTOR

Robert Alvin Long, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 24, 1973, Ser. No. 354,028
Int. Cl. H01r *43/00*; H05k *13/06*
U.S. Cl. 29—203 MW 7 Claims



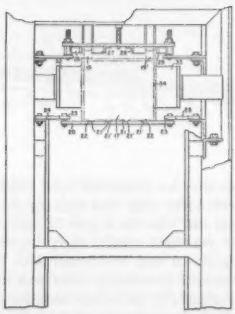
Apparatus for connecting conductors to the terminals in a connector comprises a conductor jig which holds the conductors in parallel spaced-apart relationship and a connector jig which holds the connector adjacent to the conductor with the conductors in alignment with the terminals in the connector. The connector jig is pivotally mounted on the frame of the apparatus to permit positioning of the conductor jig on the apparatus frame and loading of a connector in the connector jig. The connections of the conductors to the terminals are formed with an insertion slide which is movable along a predetermined path extending past the conductor jig and to the connector jig.

3,816,898

APPARATUS FOR ARRANGING AND SOLDERING TOGETHER ELECTRODE SETS FOR LEAD ACCUMULATORS

Tor Axel Odman, Stockholm, Sweden, assignor to Aktiebolaget Tudor, Stockholm, Sweden

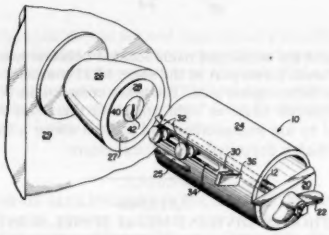
Division of Ser. No. 207,336, Dec. 13, 1971, Pat. No. 3,734,167. This application Feb. 2, 1973, Ser. No. 329,146
Int. Cl. H01m *35/00*
U.S. Cl. 29—204 5 Claims



Apparatus for producing finished plate sets constituting a cell in a lead-acid accumulator. Positive and negative plate

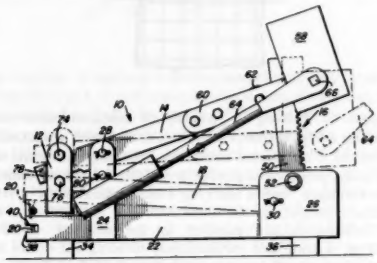
electrodes and separator sheets, in proper sequence and number, are fed in at station A, arranged and adjusted positionally relative to one another at station B, and inverted so that the plate lugs are fluxed at station C. The lugs are inserted into mold troughs carried by a lower chain system at station D, and the pole bridges with connecting terminals or external terminal posts formed integrally therewith during the travel to station E, after which the mold troughs are removed and the finished plate set is removed as a sub-assembly at station F.

3,816,899
LOCK CORE PULLER FOR SPRING RETAINED LOCKS
George J. Kitts, 38 Queenlily, Levittown, Pa. 19057
Filed May 30, 1972, Ser. No. 257,499
Int. Cl. B23p *19/04*
U.S. Cl. 29—263 **6 Claims**



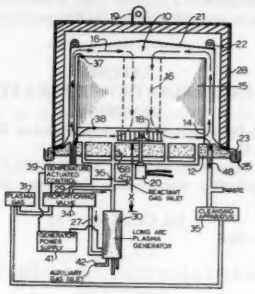
A device for removing a spring retained lock core from a lock without damage thereto comprising a threaded shaft having at one end a bit to be inserted in the keyway past a couple of lock pins, and a threaded crank on the other end adapted to bear on a pressure plate to withdraw the bit, lock mechanism and lock core from the lock.

3,816,900
ROLLER CHAIN BREAKER
Lester L. Spraker, 803 East Somers St., Eaton, Ohio 45320
Filed Sept. 13, 1972, Ser. No. 288,541
Int. Cl. B21l *21/00*
U.S. Cl. 29—267 **18 Claims**



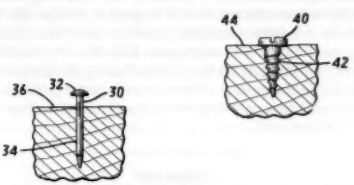
A punching tool particularly for breaking roller chain and the like has a member connected to a pivotally mounted lever and a link. A rack and pinion arrangement permits selective pivoting of the lever for movement of the member and link. The link has one or more punches arranged thereon for engaging a workpiece arranged in a recess provided in a base member pivotally mounting the lever and link. A die communicates with the recess for cooperating with the punch during punching operations. Preferably, a plurality of punches and mating dies are provided for simultaneously punching out a plurality of roller chain pins.

3,816,901
METHOD OF CONVERTING A FUEL BURNING BATCH ANNEALING FURNACE TO A GAS PLASMA HEAT SOURCE TYPE
Salvador L. Camacho, O'Neal Rd., Raleigh, N.C. 27707, and James K. Magor, 3555 Hamstead Ct., Durham, N.C. 27702
Filed Feb. 16, 1973, Ser. No. 332,919
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **7 Claims**



A method and apparatus for heat treatment, i.e., annealing or softening, of metal materials in the nature of coiled rod, wire, strip sheet, and the like, utilizes a conventional batch-type furnace with a controlled atmosphere heated by an electric arc source, i.e., a plasma generator. A method of converting the conventional batch furnace to such operation is disclosed.

3,816,902
METHOD OF MAGNETICALLY SHRINK-FITTING MEMBERS
Andrew E. Beer, 25 Sutton Pl., New York, N.Y. 10022
Filed Sept. 19, 1972, Ser. No. 290,349
Int. Cl. B23p *11/02*
U.S. Cl. 29—446 **14 Claims**



Magnetostrictive fastener arrangement that relies upon the fractional change in length of a ferromagnetic element under the influence of a magnetic field (magnetostriction) to alter the physical cooperating relationship between the element and a second element. Each of the elements may exhibit the same or a different magnetostrictive effect in the presence of a magnetic field, and each of the elements is dimensioned so that a different physical relationship between the elements is achieved when either or both elements undergoes a fractional change in length.

3,816,903
METHOD OF FABRICATING AN IMPREGNATED POROUS METAL MOULD

Paul Johnson Garner, Thorp Bay, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 886,782, Dec. 19, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 246,925

Int. Cl. B23p *17/00*

U.S. Cl. 29—527.2 **11 Claims**

Producing a mould, particularly a prototype mould by spraying a metal shell on to model, impregnating the metal shell by application of a curable resin to the moulding surface, curing the resin and backing the shell to produce the mould.

3,816,904
TOOL EXCHANGER DEVICE FOR A STAMPING MACHINE

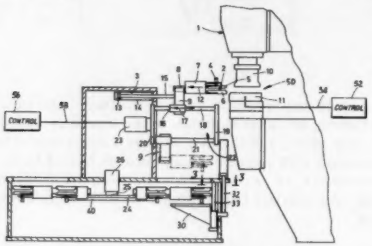
Eugen Herb, Ditzingen, Germany, assignor to Triumph & Co., Stuttgart, Germany

Filed Aug. 25, 1971, Ser. No. 174,702

Claims priority, application Germany, Sept. 5, 1970, 2044183

Int. Cl. B23q *3/155*

U.S. Cl. 29—568 **12 Claims**



A stamping machine includes a tool carrier having a receiving part, or tool carrier for a punch and for a bottom die. A cassette is provided for orienting the tool elements therein so that they may be moved into engagement with the tool carrier automatically. An automatically operable casette loading and loading device is located adjacent the tool carrier which and includes a rotatable support having a plurality of longitudinally extending distance members along which is movable a clamp or holder for a cassette carrying the tool elements. The distance members are shiftable for example, by rotation of disc plates which carry the members, so that they may be oriented downwardly in a position for receiving a cassette which has been selected from a magazine storage disc for the casetts by a selector transfer member and then shifted upwardly to a position in alignment with the tool carrier. The cassette receiver may be then shifted along the distance members to move the cassette with the tools into a position so that the tools may be easily deposited into the carrier after another one is first removed.

3,816,905
COMPLEX INTEGRATED CIRCUIT COMPRISING MOS TRANSISTORS OBTAINED BY ION IMPLANTATION

Jean Bernard, Athis-Mons; Joseph Borel, Grenoble; Philippe Glotin, La Tronche, and Jacques LaCour, Grenoble, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

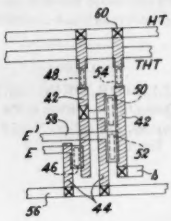
Continuation of Ser. No. 157,323, June 28, 1971, abandoned. This application Apr. 5, 1973, Ser. No. 348,029

Claims priority, application France, July 2, 1970, 70.24545

Int. Cl. B01j *17/00*

U.S. Cl. 29—571 **8 Claims**

An MOS transistor integrated circuit formed on a semiconductor substrate of a given type of conduction covered with a thin silica layer (SiO_2), an inert passivation layer and a metallization layer. Strips obtained by ion implantation in the substrate surface form areas for the drain and source contacts of the MOS transistors as well as connections between two points of the circuit. The metallization layer which is removed in said zones is of opposite conduction type with respect to the substrate and the metallized oxide located between two adjacent doped areas forms part of the same MOS transistor and constitutes the transistor gate. The other connections are formed by metallized strips at right angles to the strips which are created by ion implantation and located above a thick silica layer which is deposited at low temperature.



3,816,906
METHOD OF DIVIDING MG-AL SPINEL SUBSTRATE WAFERS COATED WITH SEMICONDUCTOR MATERIAL AND PROVIDED WITH SEMICONDUCTOR COMPONENTS

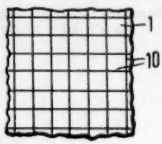
Richard Falckenberg, Unterhaching, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Erlangen, Germany

Continuation of Ser. No. 46,247, June 15, 1970, abandoned. This application Feb. 26, 1973, Ser. No. 335,739

Claims priority, application Germany, June 20, 1969, 1931245

Int. Cl. B01j *17/00*

U.S. Cl. 29—583 **3 Claims**



Process of dividing a plurality of semiconductor components on a Mg-Al spinel substrate, coated with semiconductor material. The process comprises providing the spinel substrate wafer, prior to the production of the individual semiconductor elements, with a marking which indicates the <100> directions, producing the semiconductor elements so that their boundaries are parallel to the marked <100 > directions, scoring and mechanically dividing the entire substrate wafer into individual components along these lines.

3,816,907
METHOD OF MANUFACTURING ARMATURES FOR ELECTROMECHANICAL ENERGY CONVERTERS

Robert A. Small, Webster Park, Ill., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.

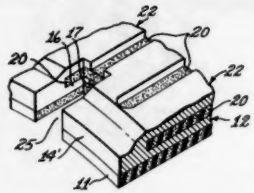
Division of Ser. No. 140,473, May 5, 1971, abandoned. This application Nov. 16, 1972, Ser. No. 307,071

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **6 Claims**

Armatures of a printed-circuit form are produced on a woven glass fiber tube formed on a mandrel, plating a layer of

conductive material on the tube, etching a plurality of grooves to form a first pattern of conductors, repeating the first four steps with a shorter tube of woven glass fiber to provide a second pattern of conductors insulated from the first, but connected thereto through rings of conductive material formed at each end by plating directly over end rings of the first pattern,



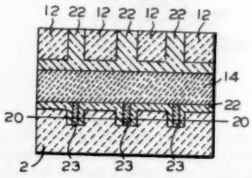
and cutting axial slots in the end rings to a depth sufficient to disconnect adjacent parallel conductors of each pattern leaving juxtaposed ends of conductors at the ends. For a rigid armature, the layers of woven glass fiber are impregnated with a resin which is rigid when cured and for a flexible armature, with a resin which is flexible when cured.

3,816,908

METHOD OF MAKING A MULTI-CHANNEL MAGNETIC HEAD

Kenichi Fujimura, and Takashi Tanaka, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 9, 1973, Ser. No. 358,609
Int. Cl. G11b *5/42*; **H01f** *7/06*
U.S. Cl. 29—603 **16 Claims**



A method of making a multi-channel magnetic head composed of a stack of a plurality of single-turn elementary heads. The method includes the step of defining a hollow for a conductive rod, which hollow extends through bore portions in core pieces and is open to each of a plurality of slots into which conductor plates are eventually placed to form with the conductive rod the single turns. The hollow is defined by the steps of inserting a hollow-defining rod of a heat resistant material into the bore portions and through first slots in a unitary body of magnetic oxide material; filling the bore portions and first slots with molten glass; cooling the molten glass; and cutting second slots at positions corresponding to the positions of the first slots. The conductive rod is then inserted, either after withdrawal of the hollow-defining rod where the hollow-defining rod is solid, or through the hollow defining rod where the hollow-defining rod is hollow. By this method, the combination of glass and the conventional conductive rod such as copper and solder becomes possible in a multi-channel magnetic head made up of a stack of a plurality of single-turn elementary heads, resulting in: long life of the resultant head because of the use of glass; low cost because of the use of an inexpensive conductive rod; very little cross-talk between adjacent channels; and high track density because of the use of a stack of a plurality of single-turn elementary heads.

3,816,909

METHOD OF MAKING A WIRE MEMORY PLANE

Yo Maeda, Shimodate; Tamotsu Ueyama, Oyama, and Naoki Fukutomi, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 32,528, April 28, 1970, abandoned. This application May 30, 1972, Ser. No. 257,905
Claims priority, application Japan, Apr. 30, 1969, 44-33446
Int. Cl. H01f *7/06*
U.S. Cl. 29—604 **4 Claims**

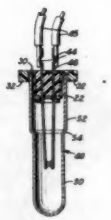
Disclosed is an improved wire memory plane, in which a memory matrix with a keeper is composed by perpendicularly arranging groups of word strips which comprise, on the back and two side surfaces of the word strip, a keeper made of a high magnetic permeability material and having a rectangular shape with one arm removed.

3,816,910

METHOD FOR MAKING THERMALLY RESPONSIVE SWITCHES

Thurman S. Jess, W. 288 Fairview Dr., Mundelien, Ill. 60060, and Wilbur F. Jackson, 27352 Ridge Rd., Rolling Hills, Calif. 90274

Division of Ser. No. 116,185, Feb. 11, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,617
Int. Cl. H01h *11/00*
U.S. Cl. 29—622 **7 Claims**



A thermally responsive switch and method for making the same in which a pair of contact elements including at least one bimetallic element are mounted within an integral support base molded from a mass of thermosetting material which is cured at the desired operating temperature for the switch. The contact elements each have a protruding stop and are biased during manufacture such that the stops abut the support base while the contact ends are maintained in a predetermined relationship with each other whereby the switch is calibrated at the same time the thermosetting material is cured.

3,816,911

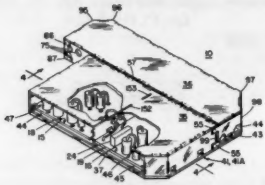
SHIELDING TECHNIQUES FOR R.F. CIRCUITRY

Thomas A. Knappenberger, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 185,552, Oct. 1, 1971, Pat. No. 3, 721,746. This application filed Nov. 17, 1972, Ser. No. 307,678
Filed Nov. 17, 1972, Ser. No. 307,678
Int. Cl. H05k *3/36*
U.S. Cl. 29—626 **4 Claims**

A technique for shielding R.F. circuitry is disclosed wherein thin metal strips are formed by chemical etching, and include bend or fold grooves similarly etched, the strips being bent into the desired configuration at the time of assembly. Printed circuit boards with the components all on one side and the

connections all on the other are placed in the compartments formed by the bent metal strips. Tabs are provided between the edges of the strips to hold the boards in place. Syntatic foam may be placed in the compartments on the component side and visco-elastic damping foam and or double sided pressure sensitive foam tape is placed between the bottom of the printed circuit board and the bottom shield cover.



Covers also formed by chemical etching are attached to the top and bottom of the compartments and puncture resistant tape may be mounted on the inside of the top and bottom covers.

3,816,912

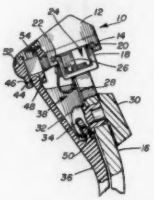
RAZOR WITH ADJUSTABLE BLADE CARTRIDGE

Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 3, 1972, Ser. No. 294,760

Int. Cl. B26b *21/16, 21/06*

U.S. Cl. 30—47 **6 Claims**



The specific disclosure provides a safety razor system comprising a cartridge having at least one single cutting edge blade and a guard member having a transverse blade guard surface, and a holder including means for releasably engaging the cartridge. The system also includes means for movably supporting the guard member on the cartridge, and means movably connected to the holder and releasably interlocked with the guard member for moving the guard member to position the guard surface with respect to the cutting edge of the blade. The system further includes manually operable means on the holder for selectively positioning the moving means with respect to the holder.

3,816,913

RAZOR WITH ADJUSTABLE BLADE CARTRIDGE

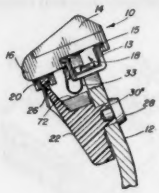
Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 3, 1972, Ser. No. 294,759

Int. Cl. 77 ; B26b *21/16, 21/06*

U.S. Cl. 30—47 **8 Claims**

The specific disclosure provides a safety razor system comprising a cartridge having at least one single cutting edge blade and a guard member having a transverse blade guard surface, and a holder including means for releasably engaging the cartridge. The system also includes means for movably supporting the guard member of the cartridge, and means mounted on the holder and releasably interlocked with the guard member for selectively adjusting the guard surface with respect to the cutting edge of the blade.



3,816,914

HOLDERS FOR RAZOR BLADES

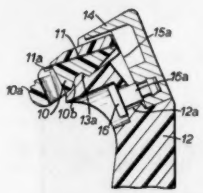
Jurgen E. Wordtmann, Solingen, Germany, assignor to Wilkinson Sword Limited, London, England

Filed May 18, 1972, Ser. No. 254,738

Claims priority, application Great Britain, May 20, 1971, 16070/71

Int. Cl. B26b *21/30, 21/52, 21/54*

U.S. Cl. 30—64 **4 Claims**



A holder for a razor blade of the kind which is secured in a permanent manner to a substantially rigid member, has a seat for receiving the rigid member, a fixed projection or recess on the seat, and clamping means for securing the rigid member on the seat with the fixed projection or recess in engagement with a recess or projection on the rigid member, release of the razor blade from the holder being effected by application of pressure to the rigid member which causes a reaction between the rigid member and the fixed projection or recess to disengage the latter from the recess or projection in the rigid member.

3,816,915

STRIPPING TOOLS

Zdzislaw Bieganski, Harpenden, England, assignor to Halina Bieganski, Harpenden, England, a part interest

Filed Mar. 2, 1972, Ser. No. 231,118

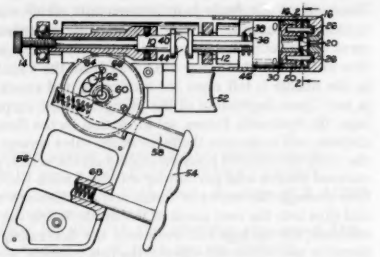
Claims priority, application Great Britain, July 7, 1971, 31779/71

Int. Cl. H02g *1/12*

U.S. Cl. 30—90.1 **6 Claims**

A wire stripping tool has a rotatable head comprising cutting blades which are radially displaced to cut into the wire sheath via a pin and slot or co-operating wedges mechanism so

that the displacing force is applied axially and converted to the radial direction by the mechanism. The described tool has a



manually driven rotation means and is made as a pistol with two triggers: one for rotation and the other for blade displacement.

3,816,916

ADJUSTABLE RAZOR BLADE CARTRIDGE

Leopold K. Kuhnl, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 3, 1972, Ser. No. 294,752

Int. Cl. B26b *21/16, 21/06*

U.S. Cl. 30—47 **6 Claims**

The specific disclosure provides a safety razor system comprising a cartridge having at least one single cutting edge blade and a guard member having a transverse blade guard surface, and a handle including means for releasably engaging the cartridge. The system also includes means for movably supporting the guard member on the cartridge, and means connected to the handle for engaging the guard member to adjust the guard surface with respect to the cutting edge of the blade.

3,816,917

TELEPHONE CONFERENCE AMPLIFIER

Ralph Archibald Jones, London, and Roger John Litile, Woodford Green, both of England, assignors to The Post Office, London, England

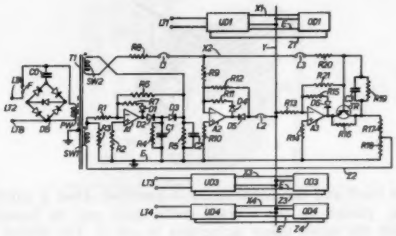
Filed June 28, 1972, Ser. No. 267,204

Claims priority, application Great Britain, June 30, 1971, 30692/71

Int. Cl. H04m *3/56*

U.S. Cl. 179—1 CN **5 Claims**

A voice frequency transmission circuit includes a signal rectifier for producing an envelope signal from a voice frequency input signal and the envelope signal is added to the input signal to produce a unilateralized output signal, that is to say a signal having a unidirectional polarity. A telephone conference amplifier is described having several transmission paths each including voice frequency transmission circuit joined by respective diode circuits to a common point, and being connected to derive signals from the common point by other diode means, so that an input signal on one transmission path appears as an output on that and the other transmission paths associated with it in the conference amplifier. The presence of the diode circuits enables the unidirectional nature of the signal to prevent undesirable breaking-in from



other signal transmission paths due to back-ground noise which may occur during a natural pause in the signal from the path active at the time. The signal rectifiers used include d.c. amplifiers with diodes connected in negative feedback paths over the amplifiers so as to produce an almost perfect diode characteristic.

3,816,918

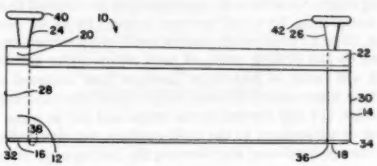
BREAD MAKING ACCESSORY

Fred Brunty, 404 College Ave., Bluefield, W. Va. 24701

Filed May 25, 1973, Ser. No. 364,096

Int. Cl. A21c *5/00*

U.S. Cl. 30—114 **8 Claims**



A bread making, manually operated accessory for single operation dough severing and spacing in a variety of sizes and pan configurations; a pair of rectangular blades are attached for relatively slidable motion with the edges substantially coincident by a pair of resilient tubular telescoping flanges integral with the respective blades on the dies opposite the blade cutting edges and spaced and clamped to spring the cutting edges together, circular handles with circular caps affixed at the ends of the blades perpendicular to the blade length provide for secure free swivelling, length changing and opening of the device.

3,816,919

MEANS FOR CUTTING NERVE TISSUE

Harold D. Portnoy, 1431 Woodward, Bloomfield Hills, Mich. 48013

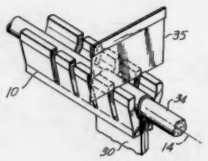
Filed June 28, 1972, Ser. No. 267,029

Int. Cl. A61b *19/00;* **B26b** *11/00*

U.S. Cl. 30—124 **10 Claims**

Means for accurately cutting nerve tissue. A fixture has a body with first and second spaced-apart arms which respectively bear first and second sidewall surfaces. A bottom surface extends between the sidewall surfaces, thereby to form an open-topped channel. A retention slot extends through the bottom surface from one end of the channel, and a guide slot extends into each of the said arms, the guide slots being aligned across the channel and directed into it. Nerve tissue can be folded into a fold of elastomer such as silicone rubber,

and this material can be passed through the retention slot pulled down so as to stretch it and to bring the enfolded nerve tissue against the bottom of the channel. The thickness of the guide slot and of the material are so related that when the stretched material is released, it expands to fill the slot and



holds itself and the nerve tissue in position. Then a cutting blade, guided by the aligned guide slots, can be brought against the nerve tissue accurately to cut it. The fixture is small enough to enter small incisions, is readily sterilizable, and is inexpensive enough to be discarded after each use.

3,816,920
NOVEL CUTTING EDGES AND PROCESSES FOR MAKING THEM

Aiyaswami Suryanarayan Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.

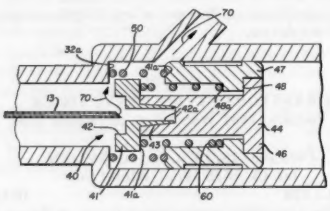
Filed Nov. 30, 1972, Ser. No. 310,931
Int. Cl. B26b *21/54*
U.S. Cl. 30—346.54 **10 Claims**

Novel cutting edges and especially razor blades which have substantially better corrosion resistance, edge hardness, temper resistance, strength and ductility than those heretofore made from stainless steel and processes for making such cutting edges. Generally the cutting edges are formed from alloys comprising 30 to 60 percent cobalt, 10 to 40 percent nickel, 15 to 25 percent chromium and 5 to 12 percent molybdenum by (a) heating strips of such alloys under conditions which will result in said strips having a face centered cubic structure when cooled to room temperature, (b) cold working the strips, (c) age hardening the strips and (d) at some time during or subsequent to the cold-working step and before or after the age hardening step forming the cutting edge therein.

3,816,921
COMBINED ENDODONTIC IRRIGATING, INJECTING AND SEALING INSTRUMENT

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio 44301

Filed Oct. 30, 1972, Ser. No. 301,864
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R **3 Claims**

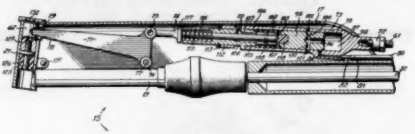


A multi-purpose instrument with accessory or servicing tools having the capabilities of irrigating, evacuating, and sealing the root canal of a tooth. The instrument is designed to be operated by one hand and includes a handle and a finger grip portion, as well as a body portion integral with the handle. Internally the body has a series of three decreasing diameter coaxial bores, with the largest of the bores being designed to receive a disposable medicator dental ampule, carpule or syringe. The second bore is designed to receive a spring-loaded valve, while the third bore opens from the opposed end of the instrument and is designed to receive a conventional needle. Disposed on the body is an access port which can be connected to a suitable vacuum source, with the valving arrangment being such that the valve is normally held in a first position in which a through passageway from the vacuum source to the needle is left open for suctioning and evacuation purposes. Upon depression of the plunger on the carpule or syringe, the hydraulic forces, set in motion by the fluid from the carpule, will overcome the force of the valve springs and move the valve to a second position closing off the access port to the vacuum source and permitting the fluid from the carpule to flow through the series of bores and out through the needle and thus into the root canal of the tooth. When the plunger is released, the springs will overcome the decreasing hydraulic pressure and return the valve to the first position.

3,816,922
AMALGAM DISPENSER AND PACKER

Charles J. Thiel, 625 Sixth Ave., and Louis J. Michaels, 1210 Sixth Ave., both of Dayton, Ky. 41074

Filed May 28, 1962, Ser. No. 198,185
Int. Cl. A61c *3/08*
U.S. Cl. 32—51 **20 Claims**



18. A combined dispenser and packer for amalgam comprising,

a housing,

an amalgam containing cartridge mounted on the forward end of said housing,

a generally cylindrical receiver chamber removably mounted adjacent said cartridge,

means for expelling amalgam from said cartridge into said receiver chamber, and

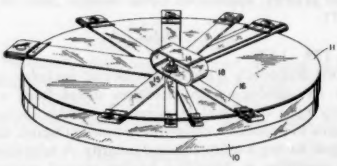
means for ejecting amalgam from said receiver chamber,

said ejecting means including a packer member removably mounted in said receiver chamber and having a tip projectable beyond said receiver chamber into operative position for packing.

3,816,923
MEASURING APPARATUS

Hans K. Habermeier, Florence, S.C., assignor to Pee Dee Pathology Associates, Florence, S.C.

Filed Apr. 12, 1973, Ser. No. 350,505
Int. Cl. G01b *11/08*; **C12k** *01/00*
U.S. Cl. 33—1 BB **10 Claims**



Apparatus for the measurement of growth inhibition zones in microbial susceptibility tests including strips located radi-

ally of a dish containing a culture, each strip being locatable directly over an innoculum. The width of the strip is equal to the acceptable diameter of a growth inhibition zone, and the strip is transparent for ready, visual comparison of the width of the strip with the diameter of the growth inhibition zone. Two or more strips can be superposed to indicate intermediate acceptability standards.

3,816,924

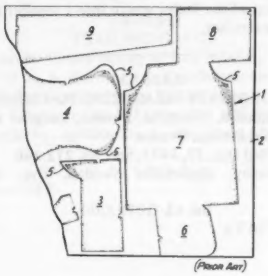
PATTERN PIECE ARTICLE AND METHOD OF PRODUCING A PRINTED PATTERN LAYOUT

Frank J. Cutri, late of 9214 Ridge Blvd., Brooklyn, N.Y. 11209 (by Louise Cutri, administratrix)

Division of Ser. No. 867,715, Oct. 20, 1964, abandoned. This application Nov. 8, 1971, Ser. No. 196,453

Int. Cl. A41h *3/02*

U.S. Cl. 33—17 R **6 Claims**



Transparent pattern pieces, preferably of thin, flexible, self-supporting plastic material, slightly larger than and approximately conforming to the configuration of the pattern to be cut, have opaque markings thereon which trace the pattern to be cut and record other desired information and cutting instructions, such as notch marks, drill holes, and sizes. The transparent pattern pieces are placed on a sheet of light sensitive paper in an abutting and/or overlapping, interlocking layout, and the pattern tracings are then outlined on the layout paper by exposing the paper to light. The resulting printed pattern layout has the effect of a three-dimensional print, as three different, contrasting shades of color are produced which correspond to the pattern outlines, the overall configuration of the pattern layout and the portions bordering the pattern layout configuration, respectively. Alternatively, the pattern layout may be electronically reproduced by optic line follower equipment.

3,816,925

TAPE MEASURES

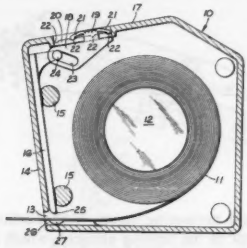
Brian D. Hogan, Birmingham, and Colin John Twamley, Warley, both of England, assignors to Rabone Chesterman Limited, Birmingham, England

Filed Mar. 26, 1973, Ser. No. 344,522

Int. Cl. G01b *3/10*

U.S. Cl. 33—138 **7 Claims**

Spring loaded coiled steel or like flexible measuring tape is provided with a pushbutton braking device which includes an elongate brake member movable along one wall of the tape housing to bear on the tape so as to retain it in an extended condition, and an actuating member incorporating a pushbutton slideable along the upper wall of the housing and linked to the brake member by interengaging peg and slot or like camming formations for positive movement of the brake



member in a rectilinear path. The device has few moving parts and is simple to assemble and operate. The housing and both said members may be formed from plastics materials.

3,816,926

LINEAR MEASURING DEVICE

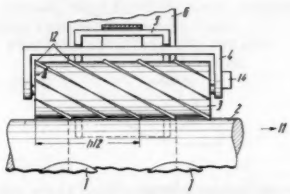
Ernst Alfred Gfeller, Zurich, Switzerland, assignor to Markus Singeisen, Grenchen, Switzerland

Filed Aug. 8, 1972, Ser. No. 278,747

Claims priority, application Switzerland, Aug. 26, 1971, 12505/71

Int. Cl. G01b *3/12, 7/04*

U.S. Cl. 33—141 R **14 Claims**



A rotatable measuring worm wheel having a plurality of worm helices of predetermined pitch thereon is urged into engagement with an object of substantial length to be measured which is arranged to travel adjacent the worm wheel. The axis of rotation of the worm wheel is arranged substantially parallel with the direction of travel of the object to be measured and the worm wheel is coupled to a counting unit to record the linear measurement of the moving object since each rotation of the worm corresponds to a measured distance equal to the pitch of the worm. In a modified form a pair of measuring worm wheels are arranged in spaced parallel relation with the helices arranged thereon so that the wheels rotate in opposite direction when the object to be measured engages and moves between the two wheels.

3,816,927

MOBILE TRACK SURVEY APPARATUS FOR DETERMINING A TRACK PARAMETER

Josef Theurer, Johannesgasse 3, Vienna I, and Franz Eglseer, Kleinreith 32, 4694 Ohlsdorf, both of Austria

Filed June 23, 1971, Ser. No. 155,861

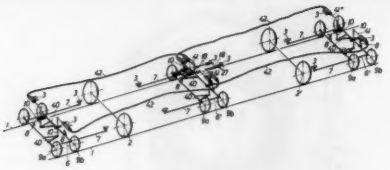
Claims priority, application Austria, July 2, 1970, 5958/70

Int. Cl. B61k *9/08*

U.S. Cl. 33—144 **12 Claims**

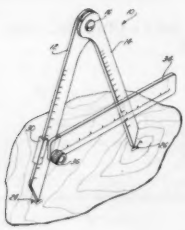
A sensing element engaged with one of the track rails is mounted on a mobile chassis for relative movement in respect thereto for measuring the position of the rail. A flexible rod is

connected to the sensing element for flexing the rod in response to the relative movement thereof. The flexing of the rod causes a strain to be set up therein, and a resistance strain gage is mounted on the rod for measuring the strain. The



resultant electrical measuring signal is proportional to the relative movement of the sensing element, which causes the flexing of the rod, and an electrical measuring signal indicator is connected to the strain gage for indicating the measuring signal.

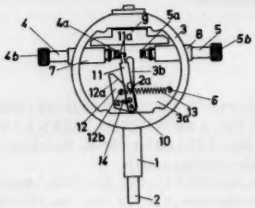
3,816,928
NAVIGATIONAL COMPUTER
Edward Fessenden, 21 Beech Hill Rd., Huntington, N.Y. 11743
Filed Mar. 21, 1972, Ser. No. 236,661
Int. Cl. G01b *3/16*; **G01c** *21/20*; **G06c** *1/00*
U.S. Cl. 33—150 **2 Claims**



A computer for use with navigation charts can determine any one unknown in the formula, speed x time = distance. The computer has a pair of speed scale arms with similar speed scales displayed thereon. Each arm terminates at one end in a speed scale point which is positioned on a check point of a navigation chart. At the other end the speed scale arms are pivotally connected. A time scale arm has a time scale displayed thereon and is pivotally mounted on one of the speed scale arms. The time scale arm intersects the speed scale on the two speed scale arms.

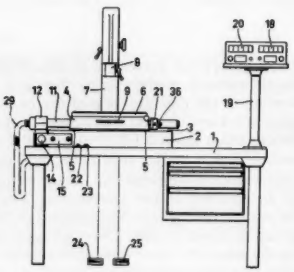
3,816,929
MEASURING INSTRUMENT
Horst-Gregor Kiffe; Paul Scheller, both of Villingen, and Wolfgang Hafner, Unterkirnach, all of Germany, assignors to Friedrich Rambold KG, Villengen, Germany
Filed Nov. 15, 1971, Ser. No. 198,934
Int. Cl. G01b *3/22*
U.S. Cl. 33—172 E **11 Claims**

A measuring instrument has a pair of spaced electrical contacts mounted on a housing and a contact lever, pivotally mounted on the housing, which carries a movable contact which moves between the electrical contacts. A feeler gauge, forming part of a dial gauge, is slidable along its axis in relation to the housing. A cam, pivotable on said housing in a plane parallel to the plane in which the contact lever pivots, has a straight edge which serves the function of a cam surface. The feeler gauge is provided with a pin which engages the straight edge and, under the influence of a spring, comprises a cam follower. A spring couples the cam and the contact lever for sharing movements in one pivoting direction and a pin mounted on the cam which engages the contact lever, causes the latter to share the movement of the cam in pivoting move-



ments in the other direction. The slope of the straight edge relative to the axis of the feeler gauge is selected to translate a large movement of the feeler gauge into a smaller movement of the movable contact.

3,816,930
COORDINATE MEASURING MACHINE
Bert Erik Edenholm, Torshalla, Sweden, assignor to AB C E Johansson, Eskilstuna, Sweden
Filed Dec. 27, 1971, Ser. No. 212,166
Claims priority, application Sweden, Dec. 30, 1970, 17727/70
Int. Cl. G01b *5/00*
U.S. Cl. 33—174 TA **16 Claims**

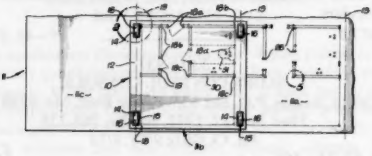


A coordinate measuring machine comprises a supporting table which is movable in two horizontal coordinate directions, and a localization means, such as a measuring microscope, substantially stationary in the horizontal plane. The supporting table is air-cushioned on a stable foundation and his especially controlled without play.

3,816,931
ARCHITECTURAL TEMPLET
Robert W. LaMar, 20704 Arminta St., Canoga Park, Calif. 91306
Filed May 25, 1972, Ser. No. 256,745
Int. Cl. B41k *3/62*
U.S. Cl. 33—174 G **13 Claims**

An architectural templet comprises a dimensionally stable, full size fabric sheet removably securable to a structural substrate in fixed relationship with architectural reference lines. The sheet includes marking guides, preferably grommeted

openings, at selected layout positions. A marker, such as a stamp inserted through the openings and aligned by a keyway



in the grommet, prints a geometric or symbolic pattern on the substrate in exact positional and angular orientation with the reference lines.

3,816,932

TRAILING GAUGE

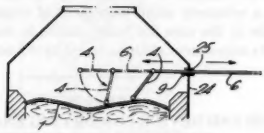
Edouard Legille, Grand Duchy of Luxembourg, Luxembourg, assignor to S. A. des Anciens Etablissements Paul Wurth, Grand Duchy of Luxembourg, Luxembourg

Filed Nov. 22, 1972, Ser. No. 308,800

Claims priority, application Luxembourg, Jan. 13, 1972, 64587

Int. Cl. G01b *5/20*

U.S. Cl. 33—174 P **16 Claims**



A method of and apparatus for scanning the surface of a charge of material in a shaft furnace in order to provide information as to the charging plane profile. The apparatus includes a gauge device which may be inserted into the furnace to a predetermined position, contact thereupon established with the charge surface and the device thereafter withdrawn from the furnace while maintaining contact with the surface and simultaneously measuring the degree of extension of the device into the furnace and the angle between the surface contacting portion of the device and horizontal. In order to determine the complete charge profile a plurality of the gauge devices are employed.

3,816,933

PRECISION HOLE SPOTTING TOOL

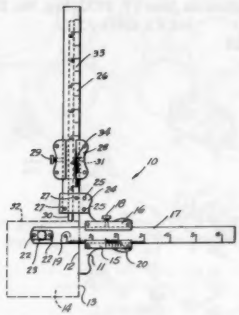
Roy R. Dillinger, 305 McElhaney Ave., South Connellsville, Pa. 15425

Filed Nov. 3, 1972, Ser. No. 303,358

Int. Cl. G01b *5/02*

U.S. Cl. 33—189 **1 Claim**

A precision hole spotting tool having a pair of scales arranged perpendicularly to each other with one of the scales being slidable with respect to a body and the other scale being fixed with respect to the body. The slidable scale carries a center punch for marking the location of a hole to be drilled. The second scale has a slide mounted thereon and arranged to contact the side of the work. A clamp is provided with each



scale for clamping the scale in adjusted position with respect to the slide and to the body and a vernier is provided for use with the scale to increase the accuracy of the settings.

3,816,934

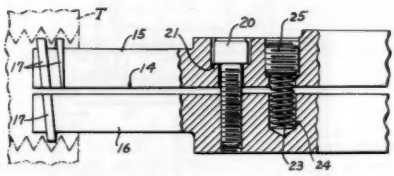
SCREW THREAD GAGE USING DRAG FOR TESTING

Stanley G. Johnson, West Hartford, Conn., assignor to The Johnson Gage Company, Bloomfield, Conn.

Filed Oct. 29, 1971, Ser. No. 193,694

Int. Cl. G01b *3/00, 3/40, 3/48*

U.S. Cl. 33—199 R **8 Claims**

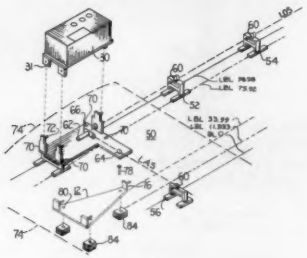


The screw thread gage disclosed enables an inexpensive gage to be provided because of the elimination of any indicator indicia or means upon the gage as well as elimination in the use of a micrometer in determining whether or not the test thread is within allowable tolerances. This result is secured solely by reliance on the frictional drag noted or the lack of drag for an unacceptable test thread, when the test thread or the gage is turned one upon the other. The gage uses two gaging members which are hinged together with spring pressure to expand the members for an internal gage and contract the members for an external gage. Two stops are provided, the first of which limits movement of the gaging members in one direction so that the gage must be threaded onto the test thread and the second stop means limits radial movement of the gage members in the other direction to the minimum material tolerance limit of an acceptable thread as determined by the standards for tolerance limits for the particular test thread. The gage construction may be for internal or external screw threads.

3,816,935
INTEGRATED ALIGNMENT SYSTEM

Charles S. Wilmot, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 46,690, June 25, 1970, abandoned. This application June 19, 1972, Ser. No. 263,913
Int. Cl. G01c 15/12
U.S. Cl. 33—228 9 Claims

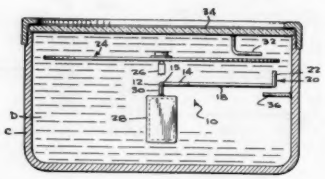


Platform and method for aligning the same for various aircraft orientation systems, such as inertial navigation, weather radar, flux gate compsss, etc. by integrated alignment, which is achieved by setting a prime reference position within the aircraft from fixed aircraft body structural points and respectively setting all other systems platforms from that prime position using a reference transfer gyro unit.

3,816,936
MECHANICAL COMPASS BEARING ATTACHMENT FOR BINOCULARS AND THE LIKE WITH COMPASS CARD CLAMPING MEANS

Donald Parson, Jr., Brooklin, Maine 04616

Filed Aug. 11, 1972, Ser. No. 279,797
Int. Cl. G01c 17/20
U.S. Cl. 33—355 15 Claims

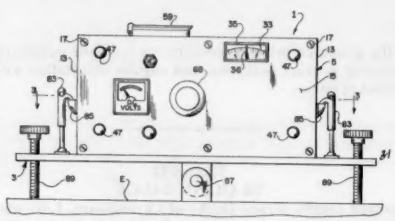


Magnetic compass bearing attachment devices for use as a separate entity and either with or without binoculars or the like for selectively and temporarily holding the bearing of the compass rose or card, after an object or target sighting has been made therewith. The devices are purely mechanical and include a weight-activated, pivotally mounted bell-crank lever system of which the weight, responsive to respective front and back tilting of the device during use, moves the card clamping end of the bell-crank lever between card-release and peripheral card-clamping positions. The weight in one form is connected at one side of the lever and is a float member immersed within damping fluid, as is the clamping lever, whereby a center of lift of the float shifts from one side to the other of a clamping axis to help effect said respective clamping lever positions with the clamping being in a direction from beneath a damping-fluid-immersed compass card. In another form the weight and clamping lever are disposed above a freely rotatable compass card, and an arm of the lever applies clamping pressure under the same basic principle of operation, but from above the compass card of a compass assembly which need not be of the damping fluid immersed type. A further refinement includes the provision of a tubular peep sight affixed preferably diametrically beneath the compass casing and transversely to the aforementioned pivotal clamping axis, to facilitate use of the devices independently of binoculars.

3,816,937
SLOPE CONTROL CONSOLE

Luther B. Burgin, P.O. Box 635, Poplar Bluff, Mo. 63901

Filed June 22, 1972, Ser. No. 265,235
Int. Cl. G01c 9/04, 9/20
U.S. Cl. 33—366 4 Claims

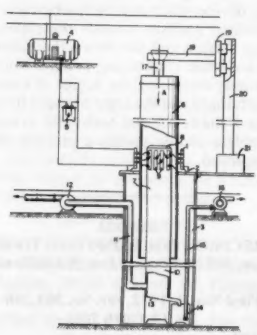


A slope control console having a case, a gravity-type slope sensor mounted therein for rotation about a horizontal axis relative to the case, an indicator wheel for indicating the inclination of the sensor relative to the case, and a manually operable gear train interconnecting the indicator wheel and the sensor such that upon operation of the gear train the indicator wheel and the sensor are simultaneously rotated with the indicator wheel being moved through a relatively large increment of rotation in response to the sensor being rotated through a relatively small increment of rotation. Provision is also made in the case for ready access to manually operable sensitivity adjustment means carried by the sensor.

3,816,938
METHOD AND DEVICE FOR DRYING ENAMEL SLIP ON INNER SURFACES OF PIPES

Evgeny Nikolaevich Podkletnov, Smolensky bulvar, 6-8, kv. 144, Moscow, U.S.S.R.

Filed Mar. 22, 1972, Ser. No. 237,135
Int. Cl. B01k 5/00
U.S. Cl. 34—1 3 Claims

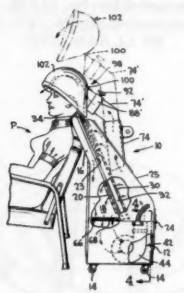


A method and device for drying enamel slip on the inner surface of pipes by induction heating wherein the vapours generated during drying of the slip are sucked out from inside the pipe.

3,816,939
METHOD FOR DRYING POLYMERS
Edward Katz, St. Louis, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.
Filed June 4, 1973, Ser. No. 366,651
Int. Cl. F26b 3/00, 3/12
U.S. Cl. 34—9 8 Claims

This application discloses a method of drying polymers and specifically concerns a method of drying hydroxypropyl cellulose acetate. Other polymers which tend to stick ball or cake significantly during conventional drying may be dried using this disclosure. The polymer to be dried must contain from 5 to 75% volatiles and may contain organic solvents. The process includes the steps of adding from 0.1% to 10% (on a dry solids basis) of a hydrophobic silane-derivatized silicon dioxide in finely powdered form to the polymer to be dried; mixing the materials to make the normally sticky polymer substantially free flowing in nature; and drying the product in a conventional manner.

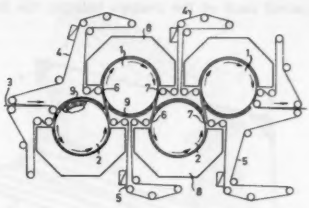
3,816,940
HAIR DRYER
Hector S. Cournoyer, Hialeah, Fla., assignor to United Commodities, Inc., Hialeah, Fla.
Filed Oct. 16, 1972, Ser. No. 297,807
Int. Cl. A45d 20/24
U.S. Cl. 34—101 11 Claims



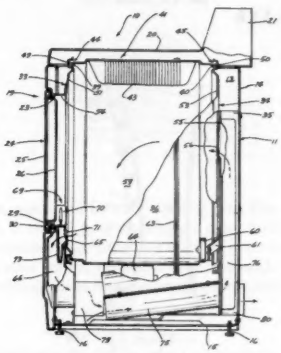
A hair-drying apparatus for long hair and/or the hair on the scalp of a user's head in which suction-blower means communicate with justapositionable manifolds forming an elongated chamber for receiving hair herebetween and the hair is laid down so that split hairs are laid down due to the natural movement of the air, the apparatus incorporating filtering and heating means and including an air scoop communicating with one of the manifolds and a head-manifold for drying hair on the scalp; and means for adjusting the head-manifold to the position of a user.

3,816,941
DRIER SECTION
Herbert Holik, and Erwin Muehle, both of Ravensburg, Germany, assignors to Escher Wyss G.m.b.M., Ravensburg, Germany
Filed Mar. 12, 1973, Ser. No. 340,582
Claims priority, application Germany, Mar. 14, 1972, 2212209
Int. Cl. F26b 11/02
U.S. Cl. 34—116 7 Claims

Drier section for drying a material web, having two superimposed rows of cylinders; said material web travelling alternating from row to row, partially wrapping said cylinders; each two of said cylinders, following one another in the direction of travel of said material web being partially wrapped by different ones of contact webs; the first, in said direction of travel, of said contact webs and the second of said contact webs being so guided as to extend for a length on both the sides of said material web in the immediate vicinity to said material web.



3,816,942
BULKHEAD SEAL FOR CLOTHES DRYER
Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed July 24, 1972, Ser. No. 274,645
Int. Cl. F26b 25/00
U.S. Cl. 34—242 5 Claims

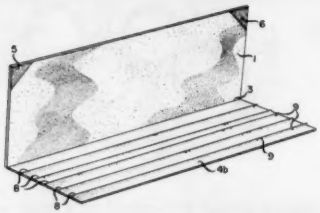


A stationary bulkhead in a fabric drying apparatus includes an annular axially extending recess openly facing an annular axially facing fabric tumbler end wall fixed to and rotatable with a peripheral sidewall. A bulkhead seal comprising deformable resilient material is disposed in the recess for running engagement with the end wall to effect an air seal between the stationary bulkhead and the rotatable end wall. The dryer construction includes similar bulkheads and seals at both ends of the fabric tumbler.

3,816,943
WRITING GUIDE FOR PARTIALLY SEEING, BLIND OR MUSCULARLY DISABLED PERSONS
Nadine E. Henry, 7 Kansas Dr., Jackson, N.J. 08527
Filed Mar. 1, 1973, Ser. No. 336,906
Int. Cl. G09b 11/04, 21/00
U.S. Cl. 35—38 18 Claims

A writing guide for partially seeing, blind or muscularly disabled persons comprises a stiff backing element including means for holding a writing surface substantially immovable, and a flexible flap connected along one edge of the backing element. The latter is constructed to fold flat against the writing surface, and includes one or more lengthwise creases which correspond to desired writing lines on the writing sur-

face. The user folds back the flap along the crease conforming to the line on which he wishes to write, for which the folded edge serves as a guide. Tactile and/or color contrasted markers adjacent each of the creases indicate the limits of the writing area. Disclosed embodiments include guides for writing and endorsing checks, filling out bank deposit and withdrawal slips, addressing envelopes and signing other types of legal documents.



3,816,944

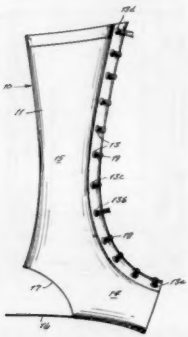
ANKLE BRACE

Lawrence J. Jaster, 702 M. Second St., Bellevue, Iowa 52301

Filed Apr. 10, 1973, Ser. No. 349,704

Int. Cl. A43b *5/08*

U.S. Cl. 36—2.5 R **2 Claims**



An ankle support device for use principably by basketball players during a game, or by other athletes, the device consisting of a leather sheath that wraps around the arch of a person's foot and the lower part of the leg, the sheath having lace openings for use by a pair of laces for tightly securing the device to the person and the sheath having a soft pliable sole that extends under the heel of the person.

3,816,945

SWIVEL CLEAT SHOE

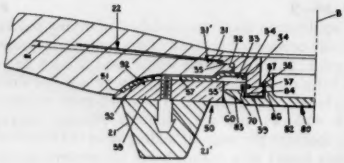
Robert B. Egtvedt, Comstock Park, Mich., assignor to Wolverine World Wide, Inc., Rockford, Mich.

Filed Sept. 10, 1973, Ser. No. 396,019

Int. Cl. A43b *13/04*

U.S. Cl. 36—2.5 AE **17 Claims**

An athletic shoe includes a support plate molded into the ball of the sole and having a pivot bearing swaged thereto and extending downwardly and outwardly from the sole. A swivel cleat plate is rotatably coupled to the bearing and includes a plurality of cleats. A snap-in cap fits within a central opening of the bearing to enclose the swivel structure for protection against dirt while permitting access for maintenance or replacement of the cleat plate. The swivel cleat plate facilitates sharp turning by the user. The shoe includes an enlarged heel cleat having tapered side walls to permit the shoe to slip, preventing injury from side impact from one direction, but to dig into the ground to facilitate turns in the opposite direction.



3,816,946

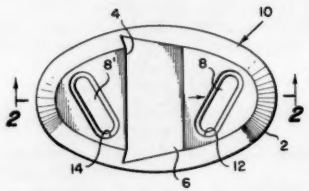
FOOTBALL SHOE AND HEEL PLATE THEREFOR

Otho Davis, Baltimore, and Donald A. Gardiner, Bowie, both of Md., assignors to Cameron Athletic Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 24,628, April 1, 1970, abandoned. This application July 26, 1971, Ser. No. 166,106

Int. Cl. A43c *15/00*

U.S. Cl. 36—67 D **14 Claims**



A heel plate is mounted on the conventional posts of a football shoe or the like by means of converging — diverging slots symmetrically positioned through the plate to provide for adjustment to accommodate different post spacings yet assure against movement of the plate once located on the posts. The heel plate may also be integrally molded with the sole of an athletic shoe and includes a notch extending transversely through the plate with the notch having a vertical wall facing the outside of the shoe and an inclined wall facing the inside of the shoe. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,816,947

LEVELING APPARATUS AND METHOD

Clifton I. Taylor, P.O. Drawer M, Maitland, Fla. 32771

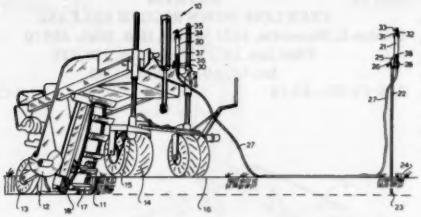
Filed July 31, 1972, Ser. No. 276,700

Int. Cl. E02f *5/06, 5/14*; **G01c** *5/04*

U.S. Cl. 37—86 **8 Claims**

A fluid leveling system for maintaining the level or grade of a trench being dug by a trenching machine, in which a pair of

glass tubes are connected with a flexible hose and filled to a predetermined level with water or other liquid. One tube is attached to a fixed point while the other tube is attaching to the



trenching machine and can be adjusted relative to the fixed point so that variations in the liquid level in either glass tube can be used to maintain the grade of the trench.

3,816,948

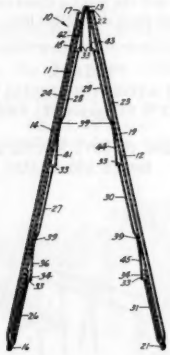
DATA CARD HOLDER

George W. Mooney, 8421 22nd Ave. South, Minneapolis, Minn. 55420, and Raymond A. Soderberg, Woodhill Dr., St. Paul, Minn. 55113

Filed Oct. 10, 1972, Ser. No. 295,837

Int. Cl. G09f *1/10*

U.S. Cl. 40—102 **4 Claims**



A holder having open pockets for accommodating data cards. Flaps adjacent the open tops of the pockets retain the cards in the pockets. The holder has two sections articulately joined together allowing the sections to be located in a first aligned position and a second side-by-side position. Separate pockets located on the outside of the holder accommodate sheet material, as blueprints, routing sheets and the like.

3,816,949

VERTICAL INDEX DEVICE

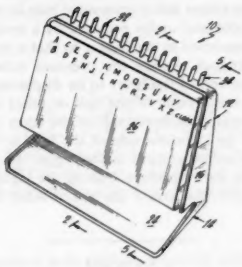
Clayton Austin Laughlin, Minneapolis, Minn., assignor to Standard Packaging Corporation, New York, N.Y.

Filed June 27, 1972, Ser. No. 266,621

Int. Cl. G09f *1/06*

U.S. Cl. 40—104.01 **6 Claims**

A vertical index device is provided including a series of index cards supported in an upright position between a vertical plate and a pivotable cover. The index device is opened to any desired index card by depressing one of a series of card actuators which extend upwardly from the top of the index device.



3,816,950

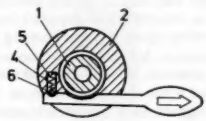
SELF-LOCKING COCKING PIN IN FIREARMS WITH CLOSURE BY ROTATION

Erkki Vesamaa, Syrjalankatu 27, 40700 Jyvaskyla 70, Finland

Filed Feb. 20, 1973, Ser. No. 333,883

Int. Cl. F41c *11/00*

U.S. Cl. 42—16 **3 Claims**



A firearm has a self-locking cocking pin. The bolt of the firearm has a closed position and an open position, and is closed by rotation. When the bolt is in the closed position, its guiding cylinder enters an incision of the cocking pin and locks the cocking pin so that it cannot be removed by pulling.

3,816,951

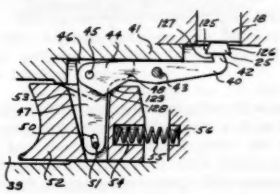
TRIGGER MECHANISM FOR CARTRIDGE TOOL

Sven Gunnar Olof Larsson, Huskvarna, Sweden, assignor to Gunnabo Bruks Aktiengesellschaft, Huskvarna, Sweden

Filed Jan. 30, 1973, Ser. No. 327,922

Int. Cl. F41c *19/00*; B25c *1/14*

U.S. Cl. 42—69 R **3 Claims**



A gun for driving nails, bolts, etc., by force generated by detonating an explosive cartridge, includes a firing mechanism with a striker pin for detonating the cartridge by operating the firing mechanism. The gun comprises a trigger mechanism with a transversally disposed spring-actuated blocking member with occupies one axial position when the safety of the gun is off and another axial position when the safety is on.

There is further provided a two-arm pivotal lever. One end of this lever serves to displace the blocking member inwardly when said member is in the one axial position and the other end of the lever enters into a transverse hole in a trigger which is axially movable and under pressure by a spring. The other lever end is connected to the trigger so that a rearward movement of the trigger against the pressure acting thereupon causes said one end of the lever to be displaced forwardly in the longitudinal direction of the nail or other element to be fired from the gun. The lower side of the lever is designed for coaction with the opposite side of the hole in the trigger so that upon forward movement of the trigger, the opposite surfaces impart to the respective ends of the lever a movement out of the longitudinal axis of the nail or other element by firing by the gun.

3,816,952

PREPARATION OF METAL FOAMS WITH VISCOSITY INCREASING GASES

Leonard M. Niebyski, Birmingham; Chester P. Jarema, Detroit, both of Mich., and Thomas E. Lee, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 63,666, Aug. 13, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 800,724, Feb. 19, 1969, abandoned, and Ser. No. 800,745, Feb. 19, 1969, abandoned. This application Mar. 10, 1971, Ser. No. 123,099

Int. Cl. C21b

U.S. Cl. 75—20 F **42 Claims**

Materials such as air, oxygen, nitrogen, argon, CO_2, and water increase the viscosity of molten aluminum base metals. Molten metals so treated yield superior metal foams when blown with a blowing agent. Typical blowing agents which can be used are zirconium, hafnium, and titanium hydrides. Non-stoichiometric materials, MH_2 wherein M is titanium, hafnium or zirconium, and a has the value of about 1.65–1.80 can be used as blowing agents. Such non-stoichiometric materials are made by heating the (substantially) stoichiometric compounds.

3,816,953

FISH LURE

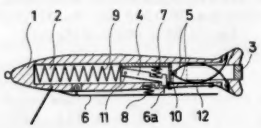
Yrjo Sakari Hameen-Anttila, Alakiventie 1 C 35, 00920 Helsinki 92, Finland

Filed Jan. 5, 1973, Ser. No. 321,240

Claims priority, application Finland, Sept. 5, 1972, 2442/72

Int. Cl. A01k *83/02*

U.S. Cl. 43—35 **4 Claims**



A fish lure with spring loaded hooks, wherein the lure body is provided with a longitudinal cavity extending essentially throughout the whole length of the body and a movable plunger is provided within the cavity and engaged at its front end by a compressible spring resting against the inner end of the cavity. Hooks are pivotally connected to the plunger and may be thrust out through openings in the lure body. The plunger is further provided with a locking member for holding it in the loaded position and at the outside of the lure there is arranged a resilient or spring-loaded trigging member in operational contact with the locking member for releasing the plunger. Preferably the hooks are connected at about the middle of the plunger and swingable through a slot in the plunger, the rear end of the plunger extending in the released position out over the rear end of the lure body so that the plunger may be set under spring load and the hooks withdrawn by simply pushing the plunger into the cavity.

3,816,954

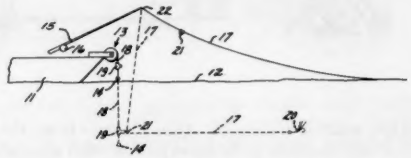
FREE LINE DOWN RIGGER RELEASE

Kenton E. Bissonette, 1425 Shubet, Holt, Mich. 48910

Filed Jan. 24, 1973, Ser. No. 326,429

Int. Cl. A01k *91/00, 95/00*

U.S. Cl. 43—43.12 **4 Claims**



A down rigger release for clean line fishing and including a gripping or clamping element securable to a wet line at or above the position of the weight. The clamping means has jaws which close on a bead element that normally slides freely up and down a lure line or fishing line and the bead, on insertion between the jaws in the gripping means, is releasably fixed in relation to the weight line. Upon fastening the bead element to the gripping element, several turns of lure line are made around the bead as by twisting the bead. On a strike or snag, the bead is jerked free of the gripping element and the turns in the line unwind so that the bead is freed to travel up and down the lure line and free from the weight line.

3,816,955

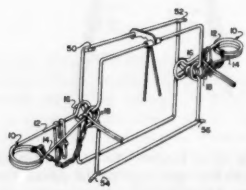
ACTUATOR FOR ANIMAL TRAP

Frank Conibear, 2170 Evergreen Pl., Victoria, British Columbia, Canada

Filed Dec. 16, 1971, Ser. No. 208,797

Int. Cl. A01m *23/26*

U.S. Cl. 43—90 **12 Claims**



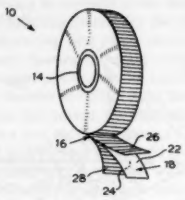
An improved actuator for a rotating frame animal trap, wherein the ring at one end of the coil spring is provided with an opening through which the adjacent ends of the frame, about which the ring is normally disposed, can pass when the actuator is swivelled around the frame to a predetermined position, so that the actuator bias is then removed from the trap jaws. A stop may be associated with the opening in the ring to prevent the frame ends from passing through the opening when the actuator is swivelled in a particular direction. A keeper may be releasably fastened across the ring opening to minimize unwanted disengagement of the actuator. Also a releasable safety clamp may be provided for maintaining the arms of the actuator in an almost fully compressed state.

3,816,956

ARTICLE FOR CATCHING INSECTS

Roseann Sekula, 4800 W. Kennedy Blvd., Tampa, Fla. 33609

Filed June 16, 1972, Ser. No. 263,698
Int. Cl. A01m 1/14
U.S. Cl. 43—114 8 Claims



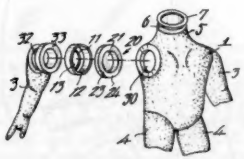
A tape for catching insects, particularly roaches and the like, is initially in the form of a roll with both sides of the tape being coated with pressure sensitive adhesives, one for mounting the tape to a floor or other supporting surface and the other preferably provided with a bait for attracting and holding an insect. Protective tapes cover each of the adhesively coated faces of the tape or, alternatively, only the insect entrapping adhesive may be covered with a protective tape. In use, the protective tape, if any, covering the mounting adhesive is removed, the tape is preferably positioned along the normal path of the insects to be caught, and the protective tape on the insect entrapping adhesive is removed, whereupon an insect coming upon the tape is entrapped by the exposed adhesive.

3,816,957

CONNECTING MEANS FOR CONNECTING RELATIVELY SOFT PARTS OF A DOLL

Koichi Nakajima, No. 7-8 Chuo 1-Chome, Edogawa-ku, Tokyo, Japan

Filed Mar. 12, 1973, Ser. No. 340,315
Int. Cl. B63h 3/46
Claims priority, application Japan, Oct. 6, 1972, 47-115488
U.S. Cl. 46—173 1 Claim



A doll comprising parts formed of relatively soft flexible synthetic resin hollow parts which are connected together by connecting means formed of relatively hard less flexible synthetic resin. The connecting means connect the doll parts in such a manner that the parts are prevented from inadvertently separating from each other while being used but allowed to be moved relative to each other by the user. The connecting means also serve to prevent water and the like from invading into the hollow parts through their connected portions.

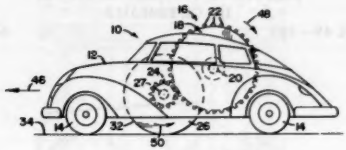
3,816,958

WHEEL DRIVE TOY

Emanuel A. Winston, 871 Marion Ave., Highland Park, Ill. 60035

Filed Dec. 20, 1972, Ser. No. 317,101
Int. Cl. A63h 1/10
U.S. Cl. 46—202 6 Claims

A toy vehicle designed to travel over a solid surface and comprising a drive means in the form of a disc or wheel which has at least a portion of its periphery arranged in surface engaging position while the vehicle is not in its upright position relative to that surface. A propelling means including a weighted flywheel is in surface engaging position when the vehicle is in upright relation to that surface and is movably connected to the drive means by a interconnecting gear arranged in intermeshing relation to the drive wheel or disc.

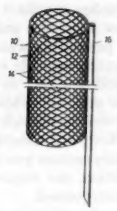


3,816,959

PLASTIC GUARD FOR PROTECTING YOUNG TREES, PLANTS, AND FLOWERS

George S. Nalle, Jr., 108 W. 2nd St., Austin, Tex. 78701

Filed Apr. 17, 1972, Ser. No. 244,443
Int. Cl. A01g 13/10
U.S. Cl. 47—23 3 Claims



A one-piece extruder plastic guard for protecting young trees, plants, flowers, and the like includes a length of tubular mesh formed by intersecting thermoplastic filaments, the tubular mesh being bonded to an elongated thermoplastic extrudate defining a stake for anchoring the tubular mesh in the ground. The tubular mesh surrounds the plant to be protected while the stake portion of the one-piece structure holds the tubular mesh in a desired position.

3,816,960

METHOD FOR GROWING PLANTS

Claude Gudin, London, and Eric Peel, Twickenham, both of England, assignors to The British Petroleum Company Limited, London, England

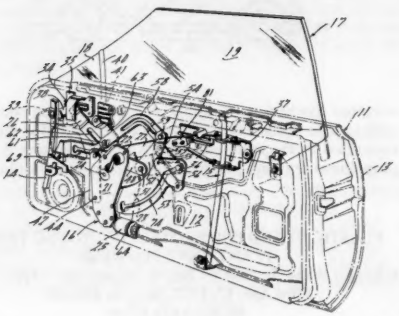
Filed Mar. 2, 1973, Ser. No. 337,508
Claims priority, application Great Britain, Mar. 13, 1972, 11579/72; May 30, 1972, 25257/72; May 30, 1972, 25258/72
Int. Cl. A01g 31/00
U.S. Cl. 47—58 16 Claims

A method of preparing plant tissue having improved photosynthetic ability by growing tissue on a first medium containing sugar, preferably glucose, and transferring tissue sequentially to growth media containing less sugar. The growing preferably takes place under intense light and increased carbon dioxide concentrations. Preferably the osmotic pressure of all the growth media is kept about the same, by the addition of an inert substance e.g. a sugar alcohol to the growth media in an amount sufficient to compensate for the reduction in osmotic pressure caused by the lower sugar content.

3,816,961
POWER OPERATED WINDOW REGULATOR MECHANISM

Chris Mistopoulos, Jr., Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 12, 1973, Ser. No. 331,922
Int. Cl. E04f 5/12
U.S. Cl. 49—103 6 Claims



A power operated window regulator mechanism adapted to lower or raise a window panel into and out of a window well between vehicle body panels, the window panel being vertically divided into separately movable ventilation and visibility sections. With the window panel in raised condition, the mechanism first may be actuated to lower the ventilation section into the window well to provide a ventilation exhaust opening in the vehicle body and then, if desired, further actuated to lower the visibility section into the window well. From a panel lowered condition, the sequence of movements to raise the panel sections is reversed.

Movement of the panel sections is controlled by a linkage system effective to transmit movement of a gear sector to window regulator arms coupled in supportive relationship to the respective ventilation and visibility sections. The linkage system contains a ventilation section regulator arm drive link and a visibility section regulator arm drive link each of which is controlled by a cam follower movable in a cam slot in a respective cam plate. The cam slots are programmed to control vertical movement of the panel sections in a desired sequence in window panel lowering or raising directions.

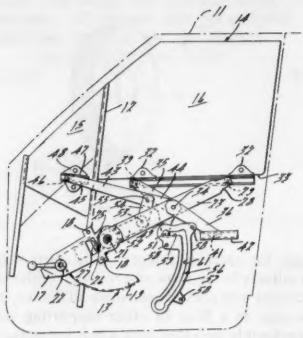
3,816,962
WINDOW REGULATOR MECHANISM

Floyd N. Ladd, Warren; Billy J. Peel, Dearborn, and Donald G. Stacy, Plymouth, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 7, 1973, Ser. No. 338,797
Int. Cl. E05f 5/12
U.S. Cl. 49—103 3 Claims

A window regulator mechanism adapted to lower or raise a window panel into and out of a window well between vehicle body panels, the window panel being divided into separate vertically movable ventilation and visibility sections. With the window panel in raised condition, the mechanism first may be actuated to lower the ventilation section into the window well to provide a ventilation exhaust opening in the vehicle body and then, if desired, further actuated to lower the visibility section into the window well. From a lowered condition, the sequence of movements to raise the panel sections is reversed.

Movement of the panel sections is controlled by a pair of regulator arms, one of which is swingable about a pivot axis on the window regulator mounting plate and is connected to the visibility section and the other of which is swingable about a pivot axis on the plate mounted arm and is connected to the ventilation section. A drive means couples the gear sector to the ventilation section arm to translate rotation of the gear sector in window panel lowering or raising direction into panel

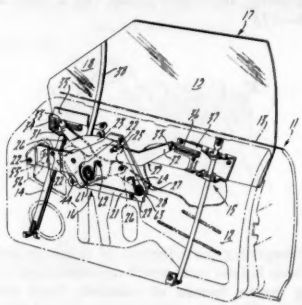


section lowering or raising movements of the regulator arms. A cam follower means coupled to the ventilation section arm and engaged with cam slot means mounted on a body panel controls the sequence of movements of both regulator arms and thereby the sequence of movements of the window panel sections.

3,816,963
WINDOW REGULATOR MECHANISM

John J. Hartmeyer, Redford Township, and Errol J. Ott, Lincoln Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 9, 1973, Ser. No. 358,775
Int. Cl. E05f 5/12
U.S. Cl. 49—103 2 Claims



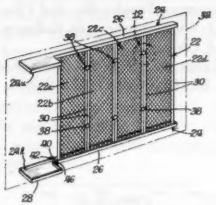
A window regulator mechanism adapted to lower or raise a window panel into and out of a window well between vehicle body panels, the window panel being vertically divided into separately movable ventilation and visibility sections. With the window panel in raised condition, the mechanism first may be actuated to lower the ventilation section into the window well to provide a ventilation exhaust opening in the vehicle body and then, if desired, further actuated to lower the visibility section into the window well. From a lowered condition, the sequence of movements to raise the panel sections is reversed.

The window regulator mechanism comprises a pair of window regulator arms coupled respectively to the ventilation and visibility sections of the window panel. The regulator arms are also coupled to a gear sector of the window regulator

mechanism through cam slot and follower systems. The cam slot and follower system for the ventilation section is programmed so that upon rotation of the gear sector through a first phase of movement in window opening direction the ventilation section is lowered to a predetermined position. During further or second phase rotation of the gear sector, the follower moves in a lost motion section of the cam slot without causing further lowering movement of the ventilation section.

The cam slot and follower system for the visibility section is programmed so that during first phase movement of the gear sector, i.e., movement causing lowering of the ventilation section, a latch plate means pivoted on the visibility section regulator arm engages a keeper device to hold the visibility section regulator arm against movement, the follower on the gear sector passing through a lost motion section of a cam slot in the latch plate means. Upon further or second phase movement of the gear sector, the follower is aligned with a section of the cam slot that permits the latch plate means to shift from keeper engaging position to a position in which the gear sector and regulator arm are locked to each other for up and down movement of the visibility section.

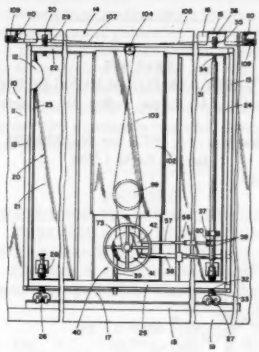
3,816,964
WINDOW GUARD
Joseph Catalano, 1218 W. Grand Ave., Chicago, Ill. 60622
Filed Nov. 14, 1969, Ser. No. 876,963
Int. Cl. E05d *15/26*
U.S. Cl. 49—127 **3 Claims**



A window guard made up of a plurality of separate panels and including top and bottom tracks to support them, the panels being positionable in a first, edge-to-edge extended position and in that position extending over a large area and covering the window to be guarded, and also positionable in a second position at one end of the area in which they are stacked transverse to their planes, and exposing the window, the tracks having enlarged trays at that end to receive the stack.

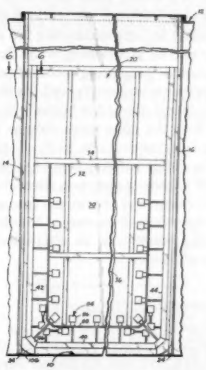
3,816,965
DOOR ACTUATING MECHANISM FOR LATERALLY MOVABLE AND SLIDABLE DOOR
Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 20, 1973, Ser. No. 389,931
Int. Cl. E05d *15/10*
U.S. Cl. 49—220 **10 Claims**

A laterally movable and slidable door is provided with an actuating mechanism for sequentially unlocking the door with respect to a door opening and then moving the door laterally outwardly whereupon it may be moved in slidable fashion to one side of the door opening. The mechanism includes an improved clutch arrangement which upon selection by the operator will engage a power assist device including a cable and pulley arrangement anchored to the door frame which will



upon the actuation of the mechanism move the door sideways in sliding relation with respect to the door opening.

3,816,966
DOOR CLOSURE ASSEMBLY
Henry Sause, Jr., 3829 N.E. Flanders, Portland, Oreg. 97204
Filed June 9, 1972, Ser. No. 261,255
Int. Cl. E06b *7/28*
U.S. Cl. 49—317 **6 Claims**



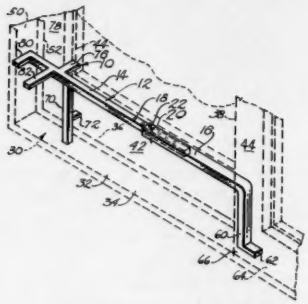
A door closure assembly for tightly closing a door opening, whereby the door assembly provides a watertight barrier at the door opening. The closure assembly includes a movable door movable to a position closing off the door opening. An elongate gasket means extends along the bottom and side margins of the door, such being received within an elongate channel which is provided along side and bottom margins of the door. Gasket shoes actuated by jacks are disposed within this channel backing up the gasket means. Actuation of the jacks shifts

the gasket shoes outwardly, generally in a direction paralleling the plane of the door, to press the gasket means against the floor and the sides of the door frame defining the door opening. This pressure also causes the gasket means to extrude against the sides of the channel receiving the gasket means.

3,816,967
SECURITY BAR FOR SLIDING DOORS

James A. Littrell, 111 Little Valley Dr., Cartersville, Ga. 30120

Filed Mar. 13, 1972, Ser. No. 233,995
Int. Cl. E05d *13/04*
U.S. Cl. 49—449 **6 Claims**



An adjustable, elongated security bar including two telescopic sections and having a depending leg on one end with an outwardly extending projection thereon which fits beneath the corner of the frame of a sliding glass patio door and having on the other end an arrangement or projections one of which is carried by a depending leg approximately the same length as the leg on the other end for positioning in the door frame track in the threshold. Another projecting member on the same end as the second leg projects outwardly and fits into the vertical channel in the door frame above the bottom corner to prevent dislodgement and stop the door from sliding. The projection on the second leg rests against the face of the second door frame which may be either a sliding glass door frame or a fixed door frame and still another projection thereabove projects in front of the second frame and blocks the frame and therefore the entire second door from movement. Another and second, outwardly projecting member is an alternative construction for a different type of frame.

ERRATA

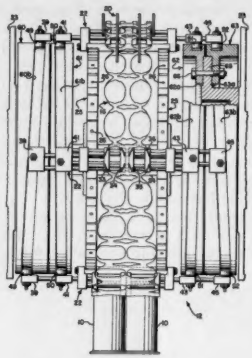
For Classes 51—241 and 51—96 thru 53—32 see: Patents Nos. 3,816,861 and 3,816,995 thru 3,817,018

3,816,968
DRUM ASSEMBLY FOR CONTAINER CARRIER MACHINE

John Edward Morgan; David Frederick Schlueter, and Lonnie Ray Seymour, all of Hoopeston, Ill., assignors to Illinois Tool Works, Inc., Chicago, Ill.

Filed May 3, 1973, Ser. No. 356,880
Int. Cl. B65b *27/04, 13/04*
U.S. Cl. 53—48 **4 Claims**

An improved drum assembly for container carrier assembling machines of the type wherein a continuous strip of resilient plastic carriers are continuously serially stretched and

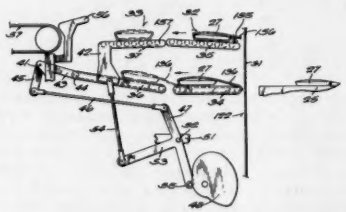


applied to containers such as cans for producing packages of the well known six-pack type.

3,816,969
FULLY AUTOMATIC WRAPPING MACHINE

Thomas C. Zimmerman, Franksville, and Charles E. Michels, Racine, both of Wis., assignors to Reliance Electric Company, Cleveland, Ohio

Filed Sept. 25, 1972, Ser. No. 290,664
Int. Cl. B65b *11/22, 59/00*
U.S. Cl. 53—66 **32 Claims**

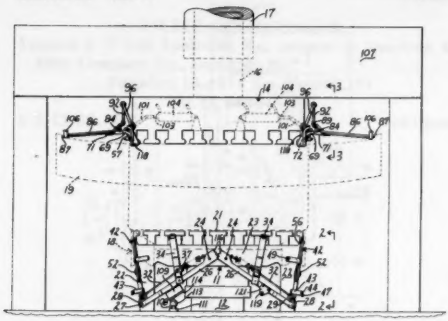


A fully automatic article wrapping machine which first forms a fold from a continuous film web around and trailing the article, with film wings extending laterally beyond both sides of the article. The machine measures the length of the film web in accordance with the length of the article and then cuts the web off at the measured length. In the course of forming the first fold, the article is advanced against a vertically disposed film web and the article is pushed through the vertical plane thereof and onto an array of conveyors. The array includes inboard and outboard sets of double-decked conveyors with means to advance the partially enfolded article serially from one conveyor to the next and thence to an output conveyor. Tucking means are associated with sad conveyor array to tuck the film wings inwardly and upwardly against the undersurface of the article, before the article is discharged from the conveyor array.

3,816,970
APPARATUS FOR WRAPPING BAGGING AND THE LIKE ABOUT BALES OF FIBERS

Donald W. Van Doorn; James B. Hawkins; William C. Pease, III, and Jack L. Colquett, all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed June 9, 1972, Ser. No. 261,294
Int. Cl. B65b *11/02*
U.S. Cl. 53—124 C **6 Claims**

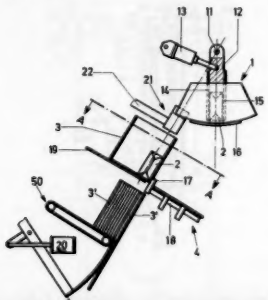


Apparatus adapted for association with the upper and lower platens of a baling press or the like and effective to wrap sheets of material about portions of a bale while under compression between the platens. The wrapping mechanism on the platen which passes into and through the fiber collection box or chamber of the press mechanism is designed to retract behind the fiber engaging surface of such platen and to lie within the vertically projected confines thereof, permitting such platen to traverse the box without interference by such mechanism. The mechanism comprises sheet engaging arms disposed when actuated to crease and fold the sheets about the ends and sides of the bale while the bale is under compression between the platens, and to hold the sheets folded, permitting the thus wrapped bale to be strapped prior to releasing the pressure therefrom.

3,816,971
DEVICE FOR SETTING UP AND FILLING CARDBOARD BOXES WITH CONTAINERS

Wilhelm Reil, Bensheim-Auerbach, Germany, assignor to Altstadter Verpackungs-vertriebs GmbH, Pfungstadt, Germany

Filed Feb. 28, 1973, Ser. No. 336,880
Claims priority, application Germany, Mar. 2, 1972, 2209997
Int. Cl. B65b *5/06, 5/10, 35/56*
U.S. Cl. 53—160 **6 Claims**

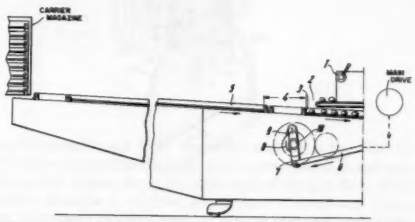


In an operation for filling containers into a cardboard box, initially a feed mechanism supplies a folded box to an inclined support surface and an angle guide displaceably mounted on a bell crank engages and opens the box. As the angle guide opens the box it displaces a gripping tip into contact with the box so that the two members combine in effecting its opening. A swivel packer supplies the containers to be packed into a guide hopper. The guide hopper is movably positionable in the direction of the height of the box and is located above the box on the support surface and guides the containers into the box. The hopper is formed of side walls and guide walls pivotally attached to the lower ends of the side walls. The guide walls are biased inwardly into the outlet path from the guide hopper for holding the containers in the hopper and, when the guide walls are spread apart, the containers can slide downwardly out of the hopper into the box.

3,816,972
APPARATUS FOR TRANSPORTING CARRIERS THROUGH A FILLING STATION

Kate Kemper, Lange Str. 8-10, 4835 Rietberg 2, Germany

Filed Feb. 9, 1972, Ser. No. 224,671
Claims priority, application Germany, Feb. 10, 1971, 2106256
Int. Cl. B65b *5/10*
U.S. Cl. 53—250 **12 Claims**

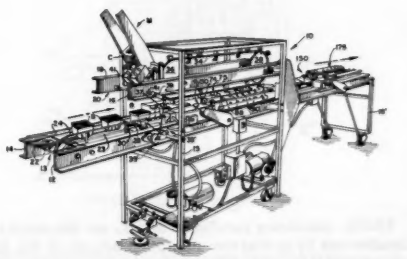


Apparatus for the transport of carriers intended for the reception of elements to be transported, comprises main drive means for the carriers, additional drive means for varying the transport movement of the carriers and control means for automatically actuating the additional drive means.

3,816,973
IN-LINE PACKAGE CAPPING APPARATUS

Leroy D. Baker, Morris, Ill., assignor to Diamond International Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 198,866, Nov. 15, 1971. This application May 19, 1972, Ser. No. 254,904
Int. Cl. B65b *7/28*
U.S. Cl. 53—287 **19 Claims**



In-line apparatus for continuously forming produce packages for marketing comprising support means upon

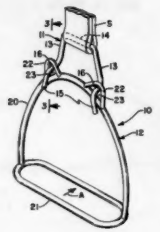
which containers filled with produce are individually deposited, accumulated, advanced and transferred to conveyor means for moving each container to successive stations of operation to form a completed package, said successive stations including a cover applying station, first gluing station, a first glue setting station, a container rotating station, a second gluing station, and a second glue setting station. Each of said gluing stations including means for applying glue to laterally projecting tab portions of each cap and means for folding the lateral portions of the cap against adjacent sides of the container associated therewith. Each of said glue setting stations including means for yieldably compressing the lateral portions of the cap firmly against the sides of the container.

3,816,974

RELEASABLE STIRRUP

Leland E. Erickson, Milnor, N. Dak., assignor to Triple J, Inc., Gwinner, N. Dak.

Filed Mar. 12, 1973, Ser. No. 340,542
Int. Cl. B68c *3/00*
U.S. Cl. 54—49 **7 Claims**



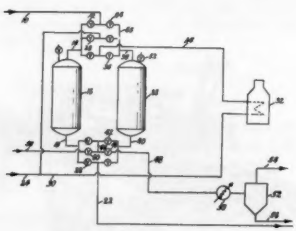
A releasable stirrup for a riding saddle. The stirrup is characterized by a forked upper member and a lower foot supporting member releasably attached to the upper member. If the rider falls or is thrown from the horse and a foot remains jammed in the stirrup, the lower member releases from the upper member to prevent dragging of the rider by the horse.

3,816,975

PURIFICATION OF HYDROCARBON FEEDSTOCKS

John Joseph Collins, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,293
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 **1 Claim**



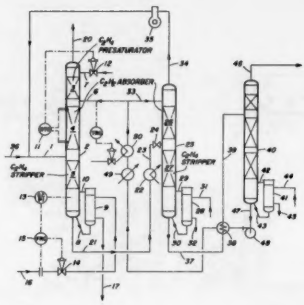
Olefin - containing paraffin feedstocks are dehydrated and desulfurized by a selective adsorption process in the liquid phase using large pore zeolitic molecular sieves. Coking of the adsorbent is prevented by avoiding contact of the olefin with a sorbate — free adsorbent and desorbing olefin from the adsorbent by displacement with water.

3,816,976

PROCESS FOR THE PURIFICATION OF ACETYLENE AND ETHYLENE

Karl Stork, New York, N.Y.; Stephen J. Markbeiter, Edison, N.J., and Louis Kniel, Scarsdale, N.Y., assignors to The Lummus Company, Bloomfield, N.J.

Filed July 15, 1971, Ser. No. 162,765
Int. Cl. B01d *19/00*
U.S. Cl. 55—48 **10 Claims**



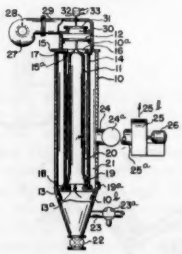
An improved process for the separation and purification of high purity acetylene and ethylene from a gaseous hydrocarbon comprised of acetylene and ethylene wherein the gaseous hydrocarbon is contacted at an elevated pressure with a selective solvent in an amount sufficient to absorb all of the acetylene and concurrent absorption of a portion of the ethylene. The enriched selective solvent is subjected at the same pressure to a stripping operation whereby a portion of the ethylene is stripped therefrom. The partially stripped enriched solvent is cooled and introduced into a second stripping zone operated at low pressure wherein the remaining ethylene is stripped therefrom and an acetylene-enriched selective solvent is obtained from which high purity acetylene is subsequently recovered.

3,816,977

METHOD AND APPARATUS FOR BAG COLLECTION OF DIRT

Mack Gordon, Medina, and John F. Phillippi, Mentor, both of Ohio, assignors to Aerodyne Development Corporation, Cleveland, Ohio

Filed Oct. 4, 1971, Ser. No. 186,373
Int. Cl. B01d *46/04*
U.S. Cl. 55—96 **15 Claims**



A method and apparatus for collection of dirt particles utilizes two fluid permeable filter media, one within the other, at least one of which is of porous flexible material. A dirty stream of fluid passes downstream through both filter media, after which the clean stream of fluid is discharged. The dirt col-

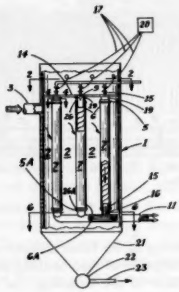
lected on the upstream surface of the flexible bag is separated to fall downwardly by introducing against the downstream surface of the flexible bag sufficient fluid pressure to cause at least partial collapse of the bag whereby the collected dirt is removed mechanically by the movement of the bag and also by movement of the pressurized fluid in a reverse direction through the bag.

3,816,978

FILTER ARRANGEMENT

Leonard J. O'Dell, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Oct. 18, 1971, Ser. No. 190,251
Int. Cl. B01d *46/04*
U.S. Cl. 55—96 **10 Claims**



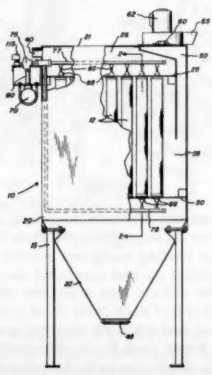
A gas cleaning arrangement of the type having gas permeable tubular filter elements through which a gas stream is passed to remove particulate matter therefrom, the filtered gas stream being subsequentially exited from the tubular elements with sources of compressed gas being provided to selectively direct opposed pulses of compressed gas along the inner surface of the tubular elements.

3,816,979

METHOD AND APPARATUS FOR CLEANING TUBE TYPE FABRIC FILTERS

Roger O. Wales, Red Wing, Minn., assignor to The Torit Corporation, St. Paul, Minn.

Filed Dec. 22, 1971, Ser. No. 210,898
Int. Cl. B01d *46/04*
U.S. Cl. 55—96 **15 Claims**



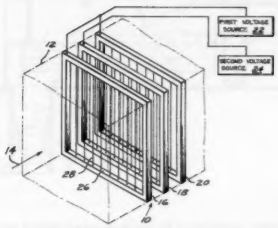
A filtering apparatus including a plurality of tubular fabric type filter elements open at both extremities and positioned in a frame in vertical position with contaminated air to be directed therethrough from the upper extremity through the walls of the tubular filtering elements. The fabric type filter elements are cleaned by creating air curtains at the open extremities thereof causing an internal drop in pressure in the filtering elements due to the blockage of airflow therethrough and resulting in collapse of the filtering elements and reverse airflow through the bag to remove particulates entrained in the fabric and allowing the same to be deposited by gravity through the lower opening of the filtering elements.

3,816,980

ELECTROSTATIC GAS FILTERS

Louis Schwab, P.O. Box 76, Fern Park, Fla. 32730

Filed Mar. 21, 1972, Ser. No. 236,638
Int. Cl. B03c *3/02*
U.S. Cl. 55—123 **5 Claims**



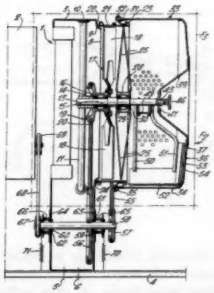
An electrostatic gas filter element for use in a gas filter includes three substantially planar electrodes spaced in substantially parallel planes along the direction of the gas flow. Each electrode includes a metallic frame across which are strung either lengths of braided wire or helical springs. The center electrode receives a first voltage while the two outer electrodes a different voltage.

3,816,981

ROTARY AIR FILTER

Jose A. C. L. Carnewal, Eeklo; Trudo M. J. Decruyenare, Wevelgem, and Georges M. Mesure, Zedelgem, all of Belgium, assignors to Clayson N.V., Zedelgem, Belgium

Filed May 19, 1972, Ser. No. 254,985
Claims priority, application Belgium, May 24, 1971, 51055
Int. Cl. B01d *46/26*
U.S. Cl. 55—267 **6 Claims**



A rotary air filter for a radiator or the like. The filter screen is rotatably installed with the characteristic that between the free circumferential edge of the filter screen and the immovable part along which the latter rotates, an open circumferential gap is provided and that the fan which displaces the

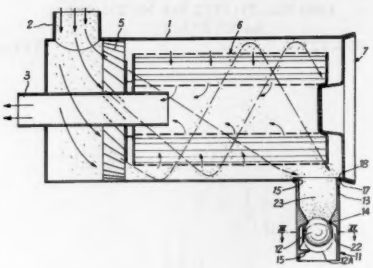
air that is to be filtered, is installed in such respect to the aforesaid open gap so that the latter is situated at the pressure side of the aforesaid fan.

3,816,982

AUTOMATIC DUST UNLOADING VALVE IN A CENTRIFUGAL AIR CLEANER

Jean Pierre Germain Regnault, Hem, France, assignor to International Harvester Company, Chicago, Ill.

Filed Dec. 13, 1972, Ser. No. 313,033
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **8 Claims**



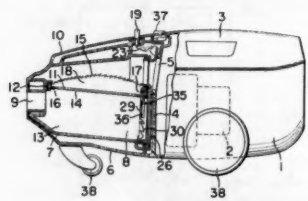
An automatic unloading valve for an air filter in the intake circuit of an internal combustion engine, which valve comprises a ball trapped within a vertical cylindrical exhaust duct between an annular valve seat and a retaining member. The ball is caused to frequently move away from the valve seat due to variations in air pressure and vibration of the engine, at which time dust accumulated within the filter can be discharged through the exhaust duct.

3,816,983

ELECTRIC VACUUM CLEANER

Katsuo Sawada; Eisaku Yoneda; Saburo Kajikawa, and Ryuichi Yasunaga, all of Yokaichi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 31, 1972, Ser. No. 258,243
Claims priority, application Japan, June 3, 1971, 46-38887; June 3, 1971, 46-46509
Int. Cl. B01d *46/00*
U.S. Cl. 55—357 **7 Claims**



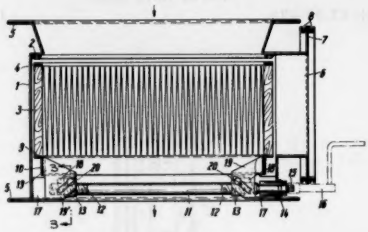
An electric vacuum cleaner is provided which generally comprises a main body and a dust collection box removably mounted on said main body. A dust collection bag holder which holds the opening edge of a dust collection bag made of a polyethylene film or the like is (removably) attached to the opening of the dust collection box. The dust collection bag is held in a folded position in the cleaner, but when the dust and dirt collected in the dust collection box are disposed of, the dust collection box is removed from the main body and the bag is extended to receive the dust and dirt from the dust collection box. The bag may be easily disposed by discarding in a garbage can or the like in a sanitary manner.

3,816,984

AIR FILTER HOUSING FOR FILTERING SUSPENDED SUBSTANCES

Gerhard Max Neumann, Berlin, Germany, assignor to Delbag-Luftfilter GmbH, Berlin, Germany

Filed Dec. 29, 1972, Ser. No. 319,658
Int. Cl. B01d *46/52*
U.S. Cl. 55—502 **5 Claims**



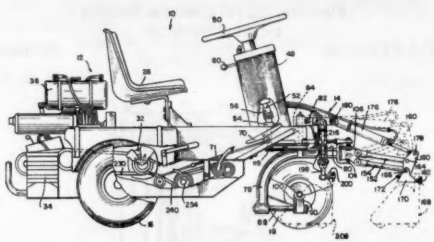
An housing having an air filter therein movable by means of a turnbuckle arrangement into sealing contact with a frame-like contact surface of the housing, the turnbuckle arrangement assuring a uniform contact pressure with said surface.

3,816,985

TURF MAINTENANCE MACHINE

Charles E. Sorenson, Mount Vernon; Clyde D. Stubblefield; Arnold A. Debaillie, both of Evansville, all of Ind.; Robert K. Bramley, Cleveland, and Hugh A. Bourassa, University Heights, both of Ohio, assignors to Hahn, Inc., Evansville, Ind.

Division of Ser. No. 220,629, Jan. 25, 1972. This application Feb. 26, 1973, Ser. No. 335,549
Int. Cl. A01d *35/12*
U.S. Cl. 56—7 **5 Claims**



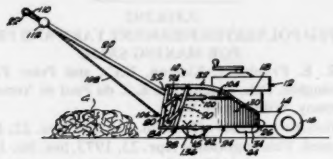
A turf maintenance machine comprising a vehicle, a plurality of reels, arms for supporting the reels from the vehicle, a fluid motor for moving each arm relative to the vehicle to position and retract the reel supported thereby, a driven shaft disposed on the vehicle, and a flexible cable drive for each reel. The distal end of each cable drive is drivingly connected to its associated reel while its proximal end is drivingly connected to the driven shaft by an electrically-operated clutch. A control valve dominates each fluid motor and an electrical switch dominates the clutch for the reel associated with the motor, the valve and switch being operatively connected such that the switch is operated when the valve is operated.

3,816,986

GRASS CATCHER ATTACHMENT FOR A ROTARY TYPE

Harry Van Der Gaast, 289 Hibiscus Dr., Miami Beach, Fla. 33139

Filed Nov. 6, 1972, Ser. No. 304,299
Int. Cl. A01d *35/22*
U.S. Cl. 56—202 18 Claims



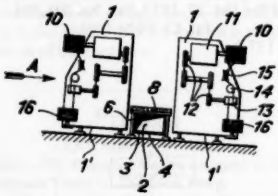
An attachment for a rotary type lawn mower comprised generally of a rigid housing providing an open mouth end portion fixed in a circumpositioned attitude about the open end of the discharge chute of the lawn mower, and an arcuate grass transfer chute communicating between the discharge chute of the lawn mower and a grass receiving hopper. The rear end and bottom of the hopper are normally closed by respective doors, interconnected by linkage means, whereby an accumulation of grass in the hopper may be selectively discharged by the operator by means of a remote control such as a rope fixed to the rear door and extending upwardly and rearwardly to the handle of a push-type or self-propelled rotary lawn mower. When applied to a rider-type of rotary lawn mower, direct linkage means from a conveniently located actuating lever to one of the doors is provided.

3,816,987

AIR CONDITIONING SYSTEM FOR A TEXTILE MACHINE

Hermann Hofstetter, Zurich, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Aug. 4, 1971, Ser. No. 168,948
Claims priority, application Switzerland, Sept. 15, 1970, 13666/70
Int. Cl. D01h *13/28*
U.S. Cl. 57—34 R 8 Claims



The air conditioning duct is provided with outlet holes in the bottom which are directed towards the floor. The jets of air from the duct break up on striking the floor so that the air flows up about the sides of the duct and into the textile machine. The system is void of any impact walls for directing air.

3,816,988

PROCESS AND AN APPARATUS FOR THE PRODUCTION OF SYNTHETIC, CRIMPED, HIGHLY ELASTIC ENDLESS YARN

Karl-August Heinroth; Herbert Neumann, both of Dormagen, Germany; Rudi Dauscher, Teheran-Pars, Iran; Hans-Dieter Jurischka, and Hans Bach, both of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 112,118, Feb. 3, 1971, abandoned. This application May 7, 1973, Ser. No. 357,610
Int. Cl. D01h *13/26*; D02g *1/02*
U.S. Cl. 57—34 HS 2 Claims

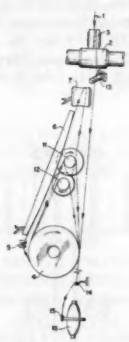
A process for the production of a crimped yarn of synthetic, thermoplastic filaments or bundles of filaments by false twisting two filaments or two bundles of filaments 5,000–15,000 twists per meter after the filaments have been heated sufficiently to fix the twist and plied together before being subjected to the false twister.

3,816,989

YARN DRIVEN FRICTION FALSETWISTER

Charles M. Rice, Candler, N.C., assignor to Akzona Incorporated, Ashville, N.C.

Filed Aug. 8, 1973, Ser. No. 386,816
Int. Cl. D02g *1/02*, *1/08*
U.S. Cl. 57—34 HS 8 Claims



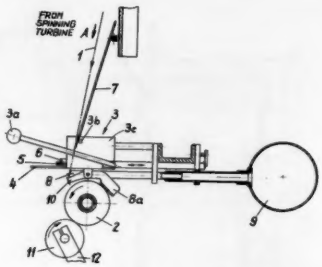
Process and apparatus are disclosed for sequentially drawing and imparting torque to a continuous filament synthetic yarn strand in a continuous process. The apparatus is adaptive to mounting on a conventional draw-twisting or draw-winding machine or for use on a winding apparatus without stretch drawing.

3,816,990

DEVICE FOR EXCHANGING BOBBINS ON AN OPEN-END SPINNING MACHINE

Herbert Hoffmann, Schwandewede, and Harm Schiebenhofer, Bremen-Blumenthal, both of Germany, assignors to Fried, Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 21, 1973, Ser. No. 343,534
Claims priority, application Germany, Mar. 23, 1972, 2214095
Int. Cl. D01h 9/04, 9/16
U.S. Cl. 57—34.5 11 Claims



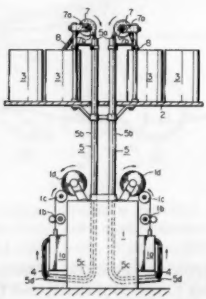
A device for treating a thread during a bobbin exchange on an open-end spinning machine, which is characterized primarily by a cutting device comprising shears operable during an advancing and retracting stroke of the cutting device, the cutting device having associated therewith devices by means of which a thread spun at full output of the spinning machine is during the advancing stroke of the cutting device caught and centered toward the shears, is held stationary during the cutting operation, is subjected to suction during a bobbin exchange, and subsequent to the bobbin exchange is automatically conveyed onto an empty bobbin sleeve on a bobbin holder.

3,816,991

METHOD AND DEVICE FOR SUPPLYING SLIVER TO A SPINNER MACHINE

Tatuo Takeuchi, Aichi-ken; Tunehiko Tuge, Kariya, and Kozo Motobayashi, Aichi-ken, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan

Filed June 28, 1973, Ser. No. 374,561
Claims priority, application Japan, May 7, 1973, 48-49825
Int. Cl. D01g 1/06, 23/00
U.S. Cl. 57—36 21 Claims



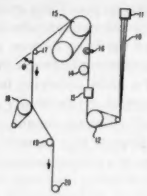
A sliver is intermittently introduced into a sliver guide conduit disposed at a position corresponding to each spinning unit in an over feeding condition. The sliver guide conduit comprises an upright portion and a substantially horizontal portion provided with a bottom delivery aperture formed below a feed mechanism of the spinning unit. To prevent an irregular draft of the sliver in the conduit, obstruction means which inhibits free downward displacement of the sliver maybe disposed in the upright conduit portion. The horizontal conduit portion is inclined a little upward so that overflow of the sliver from the bottom aperture can be prevented.

3,816,992

CRIMPED POLYESTER FILAMENT YARN AND PROCESS FOR MAKING SAME

Hans R. E. Frankfort, Kinston, N.C., and Peter F. Lyons, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 210,884, Dec. 22, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,808
Int. Cl. D02g 1/16, 3/24
U.S. Cl. 57—140 R 14 Claims



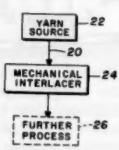
Polyester textile filaments which have asymmetric shrinkage properties, and may be heat-relaxed to provide a high crimp frequency and a narrow crimp frequency distribution, are produced by melt-spinning a single synthetic linear polyester composition, drawing the filaments and then passing them over an unheated non-metallic pin at high speed. The process conditions are controlled to provide filaments of regular cross-sectional configuration having a modified minor portion, distinguishable from the remainder of the filament by a different refractive index, which extends substantially continuously along the filament.

3,816,993

FRICTION TWIST TANGLING OF YARNS

Talmadge W. McWaters, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 27, 1972, Ser. No. 301,394
Int. Cl. D02g 3/00
U.S. Cl. 57—157 R 5 Claims



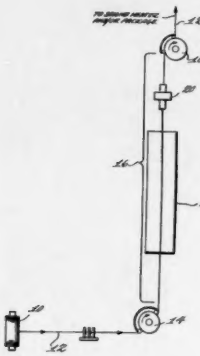
Filaments of multifilament yarn are intermingled by being mechanically false-twisted. The resulting yarn is compact and coherent, having handling properties equivalent to a twisted yarn.

3,816,994

FALSE-TWIST TEXTURING PROCESS WITH IMPROVED FEED YARNS AND FEED RATES

Ronald J. Small, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 11, 1973, Ser. No. 349,930
Int. Cl. D02g 1/02
U.S. Cl. 57—157 TS 4 Claims



Improvements in a conventional false-twist texturing process are disclosed which produce textured polyester yarn of improved quality (compared with that produced by conventional false-twist texturing) of the type obtained by known draw-texturing processes without the unstable feed yarn problems and feed yarn rupturing at start-up (and hence apparatus modification) problems incident thereto. The improvements comprise utilizing as the feed yarn in a conventional false-twist texturing process, a polyester yarn having (1) a spin-drawn orientation, free of mechanically-drawn orientation, with a birefringence within a range of the order of 0.02 to 012, (2) a percentage elongation-to-break within a range of the order of 60% to 200%, and (3) a zero-strength temperatue above approximately 235°C; and continuously positively feeding the feed yarn into and out of the texturing zone provided by the apparatus in performing the process, while maintaining the twist-setting temperature or heater temperature of the apparatus below the zero-stength temperature of the feed yarn, at feed rates into and out of the texturing zone in accordance with the formula DR > (OR) [EB/100 + 1)]wherein DR is the feed rate of the feed yarn out of the texturing zone divided by the feed rate into the texturing zone, or is a constant within a range of the order of 0.63 to 0.70, and EB is percentage elongation-to-break of the feed yarn.

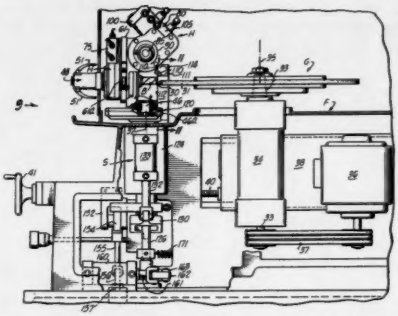
3,816,995

END MILL GRINDER

Ernst Borchert, III, Pomona, Calif., assignor to Omark-Winslow Aerospace Tool Co., Portland, Oreg.

Filed June 29, 1972, Ser. No. 267,437
Int. Cl. B24b 3/06, 7/02, 9/00
U.S. Cl. 51—96 7 Claims

A production type machine is designed to grind end mills at a high rate while maintaining rigid standards of accuracy of dimension. Adjustments are quickly and easily made for different profiles of the ground face, the number of flutes on the mill, the size of the end mill, and so on. The machine will selectively grind either a curved cutter face, or an angular primary-secondary relief form thereon. Operation of the apparatus is fully automatic once the grind cycle is started, after



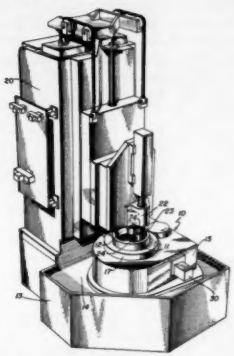
necessary adjustments are made, as only the loading and unloading operations are manually performed.

3,816,996

GRINDING MACHINE

Herbert R. Uhtenwoldt, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Nov. 24, 1972, Ser. No. 309,201
Int. Cl. B24b 17/02, 5/16
U.S. Cl. 51—101 R 10 Claims



A grinding machine for forming a non-circular surface on a workpiece and means for preventing mis-formation of the surface due to lack of normalcy between the master cam and the cam follower.

3,816,997

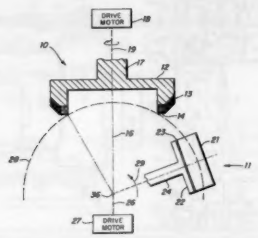
APPARATUS FOR SIMULTANEOUSLY PERFORMING ROUGH AND FINE GRINDING OPERATIONS

Wiktor Rupp, Lowell, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 20, 1972, Ser. No. 235,894
Int. Cl. B24b 9/14
U.S. Cl. 51—124 L 9 Claims

Apparatus for simultaneously performing rough and fine grinding operations on the surface of a work piece. The apparatus includes a cup-shaped grinding tool having rough and fine grinding rings coaxially mounted for rotation about their common axis. The work piece to be surfaced is supported for movement along a curved path such that the work piece will

intersect the grinding tool as it moves along the path. As the work piece moves across the grinding tool, it first encounters the rough grinding ring which rougly grinds the work piece surface and immediately thereafter encounters the fine grinding ring which performs the fine grinding operation on the



roughly ground surface. The apparatus is particularly designed to grind glass or plastic lenses into a form ready for polishing although it may also be utilized in a wide variety of other surfacing operations. The apparatus may be designed to grind one lens at a time or a plurality of lenses simultaneously.

3,816,998

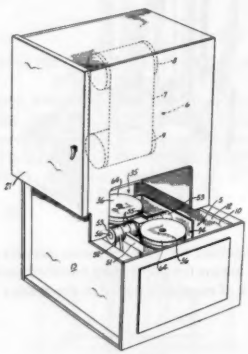
METHOD OF AND APPARATUS FOR RAPIDLY ABRADING METAL WORKPIECES

Howard W. Grivna, Minneapolis, and Donald C. Elm, St. Paul, both of Minn., assignors to Timesavers, Inc., Minneapolis, Minn.

Continuation of Ser. No. 242,111, April 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,474, Sept. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 38,431, May 18, 1970, abandoned. This application May 16, 1973, Ser. No. 360,001

Int. Cl. B24b *21/12, 21/18*

U.S. Cl. 51—145 T **78 Claims**



The surface of a workpiece is rapidly abraded by a fast moving abrasive belt trained over a contract drum and against which the workpiece is forcefully engaged. The workpiece is carried on a work supprt that rotates on an axis near and transverse to that of the drum and which intersects the drum intermediate its ends. The work support has feeding and retracting motion substantially parallel to its axis, and feed force is applied to it in one embodiment of the invention by an elastic biasing medium from which stored mechanical energy is released during feed; in another, the feed force is produced by controlled rotation of jack screws, and in still another embodiment of the invention, the feed force is provided by hydraulic pressure governed by a spring-biased pressure-responsive control valve. Feed rate control is also incorporated in the machine to adapt it to use on interrupted surfaces and to different materials.

3,816,999

DRUM POLISHING APPARATUS

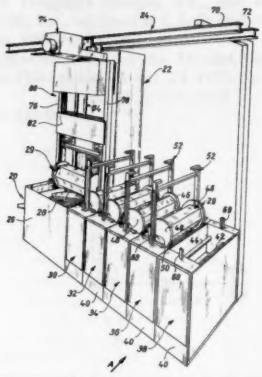
Manfrid Dreher, Hauptstr. 74, Engelsbrand, Germany

Filed Feb. 9, 1973, Ser. No. 331,042

Claims priority, application Germany, Feb. 9, 1972, 2205998

Int. Cl. B24b *31/02*

U.S. Cl. 51—164 **7 Claims**



Drum tumbling apparatus for surface treatment of small metal objects which includes at least one drum, whose body is provided with hinged cover which can be opened in order to receive the objects and a treatment medium and thereafter closed. The drum is provided at each of its ends with integral wheel-like ends by which they lie on top of two parallel support rollers arranged in a rack one of the supports may be driven while the other runs freely. The apparatus includes a transport arrangement by which the drum can be removed for service for filling and emptying.

3,817,000

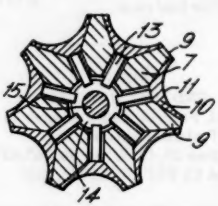
APPARATUS FOR PRODUCING THE RING MEMBER OF A GEROTOR GEAR SET

Svend Age Holm, Nordberg, Denmark, assignor to Danfoss A/S, Nordberg, Denmark

Division of Ser. No. 115,579, Feb. 16, 1971, Pat. No. 3,705,619. This application June 19, 1972, Ser. No. 264,032

Int. Cl. B24d *17/00*

U.S. Cl. 51—204 **2 Claims**



The invention relates to a method and apparatus for producing the ring member of a gerotor gear set. Ring members are first formed roughly to size by broaching a stack of blanks. The honing of the crests and flanks of the teeth is done

with a honing mandrel having tapered cross section with the same shape as the star member of a gerotor gear set. The honing mandrel is reciprocated and at the same time is given rotational and orbital movements which correspond to the movements of the same character which occur in the operation of a gerotor gear set wherein the star member may have both rotational and orbital movement relative to the ring member of the gear set.

3,817,001

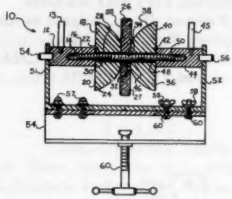
KNIFE SHARPENING APPARATUS

Frank Salvatore, 2911 Breker St., Pittsburgh, Pa. 15212

Filed Aug. 18, 1972, Ser. No. 281,985

Int. Cl. B24d *7/00, 15/02*

U.S. Cl. 51—210 **5 Claims**



knife sharpening apparatus that has a grinding stone held in frictional engagement by semi-spherical metallic abutment members engaged in abutting relation to cylindrical shafts concentrically mounted on a threaded axle and supported in angle brackets by extending pin connections. Wing nut and bolt combinations hold the angle bracket in binding engagement to a horizontal bracket rigidly secured to a work area by a clamp and provide an expedient method for replacing a worn grinding stone.

3,817,002

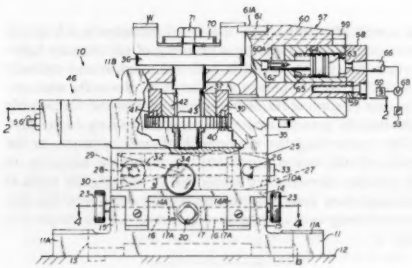
AUTOMATIC INDEXING HEAD FOR MACHINING A WORK PIECE

Stanley H. Carlson, 7 Stephen St., Derby, Conn. 06418

Filed June 1, 1972, Ser. No. 258,531

Int. Cl. B24b *3/34*

U.S. Cl. 51—216 ND **15 Claims**



This disclosure is directed to an automatic indexing head for machining a work piece. The indexing head comprises a base support for mounting the head to the table of a machine to support a work piece relative to a cutting tool at a given angle. Mounted on the base is a work holder which is operatively associated with a unidirectional drive for slightly over indexing the work piece a predetermined amount; and a locator is disposed opposite the work piece which when operated is arranged to mesh with the work piece to accurately effect the indexing thereof to the cutting tool adapted to operate on the work piece.

3,817,003

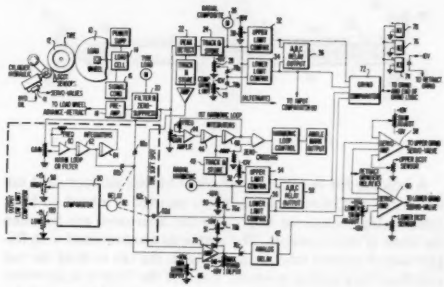
HARMONIC COMPOSITE GRINDING OF TIRES

Freydoun Monajjem, Waco, Tex., assignor to The General Tire and Rubber Company, Akron, Ohio

Filed Apr. 5, 1972, Ser. No. 241,246

Int. Cl. B24b *1/00*

U.S. Cl. 51—281 **4 Claims**



A method and apparatus for grinding tires to reduce the force reaction between the tire and load wheel to predetermined limits both as to the fundamental of the force reaction and a harmonic of the fundamental. Automatic switching from one to the other modes of grinding is provided.

3,817,004

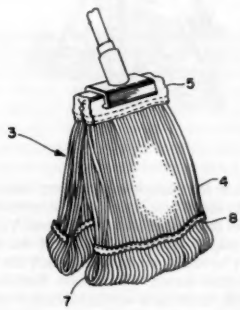
SCRUBBING OR BUFFING DEVICE IMPREGNATED WITH ABRASIVE AND METHOD OF MAKING SAME

Theron V. Moss, 3175 Falmouth Rd., Shaker Heights, Ohio 44122

Filed May 1, 1972, Ser. No. 249,265

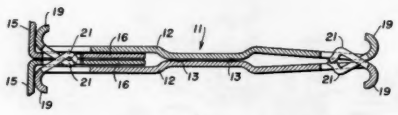
Int. Cl. B24d *11/00*

U.S. Cl. 51—400 **9 Claims**



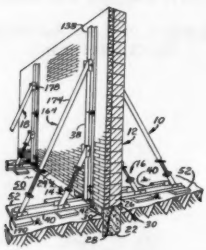
A scrubbing or buffing device in the form of a pad or mop having at least some cords covered or coated with a mild abrasive which is adhered to the cords by a suitable adhesive. The amount of abrasive may be controlled by selectively coating the cords.

3,817,005
PANEL SUPPORT BRACKET
Clarence E. Rannefeld, 2302 Fleetwood Dr., S.E., Decatur, Ala. 35601
Filed May 8, 1972, Ser. No. 251,302
Int. Cl. F16b 5/06
U.S. Cl. 52—753 J 2 Claims



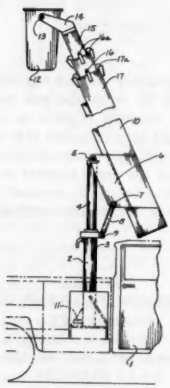
A bracket for holding a wall panel having an apertured tab wherein a pair of resilient elements secured in a back-to-back relationship cooperate to receive the apertured tab between the ends of the elements. The elements are provided with fingers which extend into the aperture in the tab to hold the tab and thus the panel in position. Each of the fingers is provided with camming surfaces positioned to be engaged by the tab for camming the fingers apart for insertion or removal of the tab.

3,817,006
APPARATUS FOR SUPPORTING MASONRY WALLS AGAINST WIND DAMAGE DURING CONSTRUCTION
John G. Williams, Glen Ellyn, Ill., assignor to Bracing Systems, Inc., Wheaton, Ill.
Filed Oct. 27, 1972, Ser. No. 301,665
Int. Cl. E04g 21/02
U.S. Cl. 52—122 13 Claims



Bracing system for supporting masonry walls during construction utilizes metal braces arranged in opposed relation on opposite sides of the wall at spaced locations. Vertical support members are placed against each side of the wall and held tightly together by snap-tie members which are placed in the wall near its bottom during construction. Horizontal members extend outwardly from each vertical member and rest on the ground or on boards laid on the ground but are not anchored to the ground. Adjustable diagonal members connect the horizontal and vertical members to form a triangular brace on each side of the wall. The diagonal members are adjusted until the vertical members are pressed tightly against the wall adjacent their upper connections to the diagonal members. The weight of the braces are carried by the foundation, preferably by removable angle members laid over the edge of the foundation during construction. The angles include studs to which additional diagonal members attached to the same horizontal members. The system permits the wall to resist moments as if the horizontal members are attached. When building high walls, the wall is preferably supported as it reaches a height of about 10 or 12 feet. When the wall reaches a height of 20–24 feet, additional vertical members are linked to the previously positioned vertical members and pressed against the wall by it were supported as its top and bottom rather than as a cantilever and causes wind loads to be transferred through the masonry wall, into the brace, into the foundation wall and then into the ground. The system is quickly assembled and, except for the snap ties which are broken off inside the wall and covered over, reusable indefinitely.

3,817,007
AERIAL LIFT MECHANISM
Thomas R. Hall, Portland, Oreg., assignor to Altec Manufacturing Company Inc., Birmingham, Ala.
Filed Oct. 4, 1971, Ser. No. 186,224
Int. Cl. B66f 11/04
U.S. Cl. 52—115 6 Claims

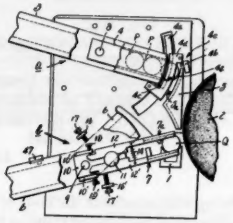


The aerial lift mechanism disclosed includes a telescopic boom arrangement, involving a plurality of rectangular tubular sections having therewithin hydraulic piston and cylinder means connected to operate such sections inwardly and outwardly, one of such sections being extendable and retractable at substantially greater rate than another, means being provided for controlling the movement of such sections, in the elevation of the boom, such means including circuitry in which suitable elements are employed to operate the parts in chosen sequence and simultaneously with certain of the elements including instrumentalities common to the respective systems.

3,817,008
APPARATUS APPLIED TO MACHINE TOOLS AND OTHERS FOR TRANSFERING WORKPIECES
Tomoyoshi Egusa, and Ichiro Nakagami, both of Iwata, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan
Filed May 30, 1972, Ser. No. 257,804
Claims priority, application Japan, Oct. 21, 1971, 46-83730
Int. Cl. B24b 47/20, 5/32
U.S. Cl. 51—215 HM 6 Claims

A workpiece transfer apparatus having elements moving in timed relation to feed workpieces from a chute to a machine

tool work machining support and, subsequently, to a machined workpiece receiving chute. A distribution element passes a workpiece from the feed chute to a pivotal receiving



element, simultaneously pushing a finished workpiece into the receiving chute. The receiving element acts to move each workpiece to and from the machining support.

3,817,009

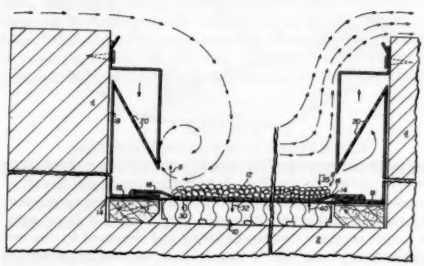
AERO-DYNAMIC ROOF

Gerald Brent Elder, Riverdale, N.Y., assignor to Dynamit Nobel AG, Postfach, Troisdorf Bez. Koeln, Germany

Filed Jan. 31, 1972, Ser. No. 221,910

Int. Cl. E04b *7/00*

U.S. Cl. 52—173 **14 Claims**



In a roofing assembly comprising a roof structure and roofing material disposed thereover, the improvement which comprises generally uniformly disposed air passageways maintained between said roof structure and said roofing material and an air conduit means communicating with said air passageways and the space above said roof; a roof structure comprising a layer of ballast material disposed on said roof at a distance of about 1 meter from the edge of said roof having a width of between about 1 and 3 meters; a roof construction comprising a layer of an elastomeric sheet material secured to the roof only at the edges thereof by a mechanical fastening means or a solvent weld securing said elastomeric sheet initially to a suitably prepared galvanized steel sheet and thence to a building structure.

3,817,010

BEAM STRENGTHENING METHOD AND APPARATUS

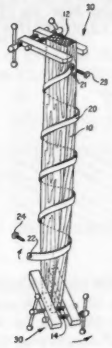
Charles D. Stegmuller, Moosa Canyon Rd., Bonsall, Calif. 92003

Continuation-in-part of Ser. Nos. 132,691, April 9, 1971, Pat. No. 3,722,562, and Ser. No. 299,792, Oct. 24, 1972. This application Mar. 8, 1973, Ser. No. 339,404

Int. Cl. E04c *3/10*

U.S. Cl. 52—223 R **2 Claims**

This invention is a strengthening and straightening method and apparatus for beams of wood or the like in which previously warped beams or those subject to warping have been



straightened or are conditioned against warping by a tension strap which applies tensioning forces to the beam.

3,817,011

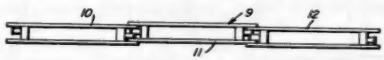
PREFABRICATED INTERLOCKING WALL PANEL

Gehres D. Weed, Edmonton, Canada, assignor to Frank Stackaruk, Edmonton, Alberta, Canada, a part interest

Filed Jan. 18, 1973, Ser. No. 324,799

Int. Cl. E04b *2/74*

U.S. Cl. 52—238 **5 Claims**

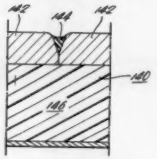


A building panel construction consisting of inner and outer panel members secured together in spaced parallel relation in any convenient manner. Spacing studs are secured between and extend along, in recessed position, each pair of corresponding vertical edges of the panel members and define laterally outwardly opening channels extending along the vertical edge portions of each panel construction. A rib or tongue member is supported from and extends along each stud within the corresponding channel and each rib or nesting tongue is spaced from the inner surface of one panel member a distance substantially equal to the thickness of one of the panel members and the spacing between each nesting tongue and the other panel member is substantially equal to the thickness of the nesting tongue. In this manner, adjacent edge portions of adjacent panels may be laterally offset the thickness of one of the panel members thereof and advanced into position with the edge-defining components of the panel constructions secured together in interdigitated relation. The outer faces of the ribs or nesting tongues are provided with stiff but flexible membranes of somewhat greater width than the nesting membranes themselves and accordingly, these membranes define tight edge-to-surface engaged weather-tight and vapor seal joints between joined marginal edge portions of adjacent panel constructions.

3,817,012
CERAMIC TILE PANEL CONSTRUCTION

Henry P. Wack, Souderton, and Karl M. Claus, Hatfield, both of Pa., assignors to American Olean Tile Company, Inc., Lansdale, Pa.

Continuation-in-part of Ser. No. 72,357, Sept. 15, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,429
Int. Cl. E04f *13/14*
U.S. Cl. 52—315 **6 Claims**

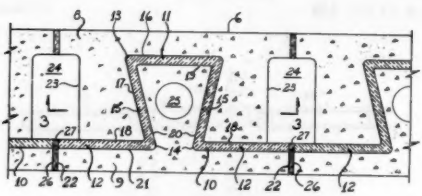


A prefabricated ceramic tile building panel includes a pregrouted sheet of ceramic tile and a layer of rigid plastic foam. The plastic is foamed in place on the tile sheet to provide a unitary, light weight, self supporting, water proof panel. For additional strength, a fiber-reinforced paper backing sheet is provided along the rear surface of the foam layer. A novel panel mounting arrangement permits the rapid installation of the prefabricated panels by those unskilled in tile installation.

3,817,013
INSULATED CONCRETE BLOCK

David Adrian Selby, 2430 O'Brien Blvd., St. Laurent, 381 Quebec, Canada

Filed Aug. 26, 1971, Ser. No. 175,185
Int. Cl. E04c *2/29, 1/40*
U.S. Cl. 52—437 **10 Claims**



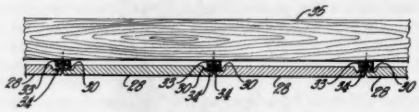
In unit masonry construction a building wall usually consists of one or two wythes of masonry with or without either an air space or an insulation layer. The use of a concrete building block unit that contained within it an insulation insert, would permit the construction of a single wythe wall. Such an insulated block could have satisfactory strength and thermal insulation characteristics by the design form of the insulation insert. Sound insulation characteristics could be improved by the inclusion of a lead sheet on the insulation insert. The use of an insulation strip in the joints and a specially designed corner block would result in a single wythe wall of improved insulation characteristics.

3,817,014
CEILING PANEL OF BONDED FIBROUS GLASS WITH AN INTEGRATED HANGER ELEMENT

Isaac Palmer Jones, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 5, 1968, Ser. No. 719,208
Int. Cl. E04b *1/82*
U.S. Cl. 52—478 **8 Claims**

A ceiling panel having a body of fibrous glass held to shape by a resinous binder and preferably made rigid at least in part by compression while the binder is set, and a hanger element such as a hook, spring clip or a tongue for lodgement upon or engagement with a receiving surface or apertured holder such as a spring clip as provided in the structure of a steel beam, the

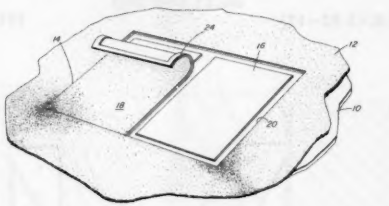


hanger element being integrated with the body of fibrous glass through a resinous material such as the resinous binder or one compatible therewith and the resinous material being in sufficient quantity to extend into and make rigid the adjacent portion of the body of fibrous glass.

3,817,015
CONVERTIBLE FLOOR SYSTEM

John W. Frangos, 2 Brimball Hill Dr., Beverly, Mass. 02114

Filed Oct. 24, 1972, Ser. No. 300,381
Int. Cl. E04f *13/08*
U.S. Cl. 52—511 **2 Claims**

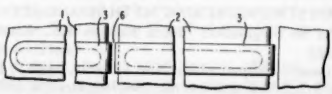


A system is provided for quickly converting a floor area from one surface to another. A hard floor, typically wood, as for dancing, is covered by one or more detachable carpet sections located within an otherwise fully carpeted floor area. The carpet sections can be detached and removed to convert the underlying area into a dance floor. In one embodiment grooves are formed in the underlying floor and contain felt strips which lock with detachable, flexible locking strips attached to the carpet sections and which lock therewith when the carpet is installed. Hardened insert strips overlay the felt strips when the carpet is removed to provide a flat, smooth dancing surface.

3,817,016
PROTECTIVE STRIP FOR MOTOR VEHICLES

Bela Barenyi, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Continuation of Ser. No. 793,428, Jan. 23, 1972, abandoned. This application May 19, 1972, Ser. No. 254,970
Int. Cl. B60r *13/00, 27/00*
Claims priority, application Germany, Jan. 23, 1968, 1680012
U.S. Cl. 52—717 **23 Claims**



A protective molding for motor vehicles in which profile parts project beyond the outer surface of the body and in

which end sections are provided at the ends of the profile parts in proximity to the edges formed in the body panels whereby the end sections are constructed as mounting strips that are adjoined by the profile parts at a distance to the edges.

3,817,017

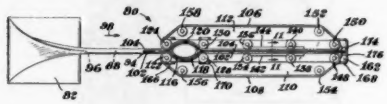
BAG CONSTRUCTION AND METHOD FOR FILLING THE SAME

Oliver R. Titchenal, 143 Shakespeare Ln., Avon, Ohio 44011

Continuation of Ser. No. 81,500, Oct. 13, 1970, abandoned. This application Apr. 17, 1973, Ser. No. 351,970

Int. Cl. B65b *43/12, 43/26*

U.S. Cl. 53—24 **18 Claims**



A bag construction embodied in a chain of connected bag elements and an efficient method for filling the same. In novel feeding and mounting concepts, the chain of bag elements is preferably fed to the filling apparatus from a folded pile, and is initially received by a mandrel which mounts the same in a curtain-and-rod-like fashion by means of a loop located along the top end of each bag. In the chain, the bag elements are substantially separated from one another such that their complete separation after filling can be easily achieved, as for example, by a gentle pulling action. In specific bag constructions, loading or filling through gusseted sections of the bag elements is made possible through novel gusset designs and filling methods, and scrap minimized, for example, by thinning strategic portions of the bag elements which later are customarily trimmed therefrom following sealing operations.

3,817,018

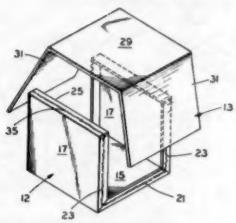
METHOD FOR FORMING A PACKAGE

James L. Vickers, Harbert, Mich., assignor to Stone Container Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 57,945, July 24, 1970, abandoned. This application Aug. 31, 1972, Ser. No. 285,211

Int. Cl. B65b *11/18*

U.S. Cl. 53—32 **34 Claims**



A method for forming a package containing a quantity of lading wherein the container for the lading is formed from two blanks made of rigid foldable material, each including an end wall and alternate side wall forming panels, one being unflanged and one including peripheral flanges along each longitudinal edge. The method includes the steps of: forming one of the blanks into a generally U-shape while concurrently partially surrounding the lading, forming the second blank into a generally U-shape concurrently partially surrounding the first blank and its lading with the end wall forming panels in opposed facing relation, and securing each alternate side wall forming panel of the unflanged blank to the peripheral flanges along one longitudinal edge of the flanged blank to form the package. The blanks are not attached together during the folding operations.

3,817,019

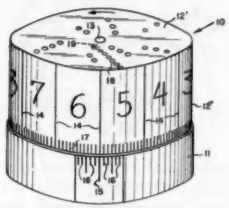
DIGITAL CLOCK AND ALARM

Herbert H. Fowler, Lexington, Ky., assignor to Elihu C. Asher, Nicholsville, Ky., a part interest

Filed Apr. 6, 1973, Ser. No. 348,674

Int. Cl. G04b *23/06*

U.S. Cl. 58—16.5 **5 Claims**



A clock and alarm and/or timer associated therewith consisting of a stationary base member having time interval indications thereon and a rotary housing having hourly time indications thereon mounted on said base, the housing having a plurality of concentric rows of openings formed in the top wall thereof and pins insertable in one or more of said openings for engaging with a tiltable type switch to complete an electrical circuit and activate an electrical device at a predetermined time.

3,817,020

ELECTRONIC DIGITAL CLOCK

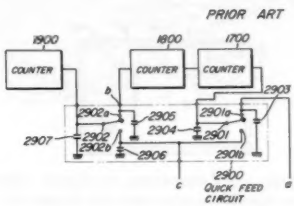
Motoharu Esaki, Oobu, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed May 3, 1972, Ser. No. 249,792

Claims priority, application Japan, May 4, 1971, 46-29686

Int. Cl. G04b *27/00*

U.S. Cl. 58—23 R **2 Claims**



A pulse signal having a constant period shorter than that of a quick feed signal and signals transmitted through the actuation of a quick feed switch are used to trigger flipflops and the flipflops deliver signals corresponding to the time of actuation of the switch.

The quick feeding operation is performed by applying the quick feed signal to counter circuits only while the signals corresponding to the time of switch actuation are being delivered. In this way, an erroneous operation due to the chattering of the switch can be completely eliminated so that the desired quick feed operation can be accurately performed and that the reference clock signal together with the quick feed signal can be applied to the counter circuits.

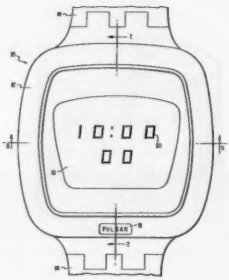
3,817,021
SOLID STATE WATCH WITH MAGNETIC SETTING

John M. Bergey, Lancaster, Pa., assignor to Time Computer, Inc., Lancaster, Pa.

Division of Ser. No. 162,813, July 15, 1971, Pat. No. 3,789,601, which is a division of Ser. No. 138,557, April 29, 1971, Pat. No. 3,782,102. This application Sept. 10, 1973, Ser. No. 396,009

Int. Cl. G04b *19/30, 27/00*

U.S. Cl. 58—50 R 3 Claims



Disclosed is a solid state electronic wristwatch with no moving parts. The watch electronics are hermetically sealed in the watch case to be free of dust and moisture and the sealed components are resiliently mounted for improved shock resistance. Two setting switches and a demand switch within the casing are operated from outside the watch by permanent magnets, the demand magnet operating with a demand pushbutton. The setting magnet may be stored in the watch bracelet.

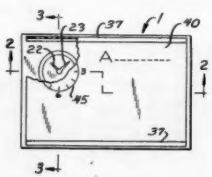
3,817,022
CLOCK

William N. Swartz, 1430 W. Wrightwood Ave., Chicago, Ill. 60614

Filed Dec. 19, 1972, Ser. No. 316,494

Int. Cl. G04b *19/30*

U.S. Cl. 58—50 R 7 Claims



An advertising display receiving surface, one side of which has an overlay comprising an advertising insert sheet that is readily removable and replaceable. An electronic clock motor is on the other side of the surface. The display receiving surface acts also as the face of the clock, but lacks the dial. The advertising display sheet contains the dial and is transparent at the portion of the display sheet that overlays the area swept by the clock hands. The display insert is readily replaceable as when the advertising message has served its purpose or when it becomes dirty. The dial portion of the advertising display insert is off center with respect to the advertising display area of the insert sheet. This permits mounting of the advertising display with any one of its sides uppermost.

3,817,023
CLOCK DEVICES

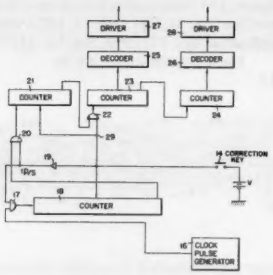
Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1973, Ser. No. 350,201

Claims priority, application Japan, Apr. 13, 1972, 47-37234

Int. Cl. G04b *27/00*

U.S. Cl. 58—85.5 8 Claims



In a clock device wherein hours and minutes are displayed by a driving circuit including a "second" counter, a "minute" counter, and an "hour" counter, there is provided a correction key which provides a first signal for stopping the counting operation and clearing the content of the "second" counter and for stepping one step the content of the "minute" counter when the key is operated, and a second signal for causing the cleared "second" counter to commence the counting operation of seconds.

3,817,024
TIME-SETTER FOR AN ELECTRONIC TIMEPIECE

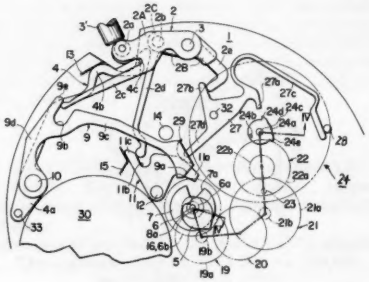
Kazuo Noguchi, Tokyo, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Dec. 12, 1972, Ser. No. 314,406

Claims priority, application Japan, Dec. 13, 1971, 46-100825

Int. Cl. G04b *27/00*

U.S. Cl. 58—85.5 4 Claims



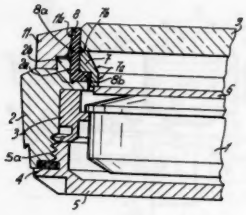
An electronic watch comprising a motor for converting electrical energy into mechanical rotational movement, an actuating means operable from the outside of the casing of the watch, and an arbor means for the hand of the watch. A gear train couples the motor to the arbor means and a cam means is operatively connected to the actuation means and the watch hands. The cam means are controlled by the operation of the actuation means for setting at least one of the hands of the watch to a reference position whereby the watch may be set by merely operating the actuation means.

3,817,025

FLUID TIGHT MOUNTING OF CRYSTAL IN WATCH CASE

Edouard Louis Siegrist, Cologny, Switzerland, assignor to Ed Wenger S.A., Geneva, Switzerland

Filed Sept. 29, 1972, Ser. No. 293,675
Claims priority, application Switzerland, Sept. 30, 1971, 14384/71
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 10 Claims



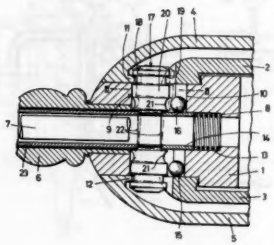
A crystal is secured in a watch case in a fluid tight manner by means of a bushing of compressible semirigid material such as nylon. The bushing fits into an annular recess at the front of the watch case and is pressed tightly against an annular wall of the recess by a compression ring which fits into an inner portion of the bushing and overlies the peripheral portion of the watch dial. The crystal fits into an outer portion of the bushing and is positioned axially by the compression ring. A tension ring surrounds an outer portion of the bushing and presses it tightly against the periphery of the crystal to provide a fluid tight seal.

3,817,026

WATCH CASE

Angel Lopez, Les Geneveys-sur-Coffrane, Switzerland, assignor to Manufacture de boites de Mintres S. Graber S.A., Renan, Switzerland

Filed Sept. 24, 1973, Ser. No. 400,141
Claims priority, application Switzerland, Sept. 28, 1972, 14200/72
Int. Cl. G04b 37/00
U.S. Cl. 58—102 5 Claims



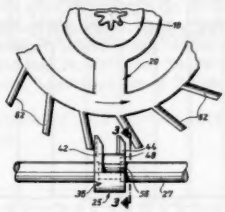
An elongated bolt holds both the front and back covers of the watch case in closed position. A pair of balls are movable behind the bolt and a control member acts on its middle portion. When pressing it the bolt tilts around the control member, lower end due to the presence of the lower ball and the upper cover unbolts.

3,817,027

PRESET PENDULUM APPARATUS

Rudolf Wittner, Johnstrasse 6, 7972 Isny, Germany

Filed Dec. 19, 1972, Ser. No. 316,555
Claims priority, application Germany, Dec. 21, 1971, 2163404
Int. Cl. G04f 11/02
U.S. Cl. 58—130 R 8 Claims



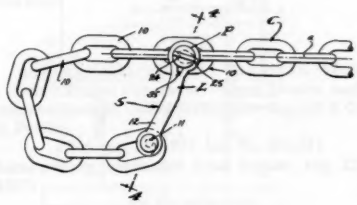
An integral cast escapement body with pallets, and preferably also a pendulum holder with a guide groove for inserting a pendulum, are secured to a shaft, preferably by injection molding. The escapement body has two abutment faces at right angles equally spaced a predetermined angle from an axial plane of symmetry in which a balance wheel is located which engages cam faces of integral pallets of the escapement body. By securing the pendulum holder to the shaft spaced the predetermined angle from stationary setting surfaces on which the abutment faces abut, it is assured that the pendulum holder and pendulum are in the center position of angular oscillation when the balance wheel engages the cam faces of the pallets.

3,817,028

CHAIN LINK SHACKLE

Henson U. Blackwood, 830 S. Fairfax Rd., Bakersfield, Calif. 93307

Filed Mar. 29, 1972, Ser. No. 239,056
Int. Cl. F16g 15/06
U.S. Cl. 59—86 3 Claims



A releasable shackle for attachment into a chain and comprising a key-shaped pin with opposite shoulders rotatively positioned by the chain link opening through which it is engaged and thereby locked between spaced legs of the shackle, and particularly adapted to be used as a safety chain connector.

3,817,029

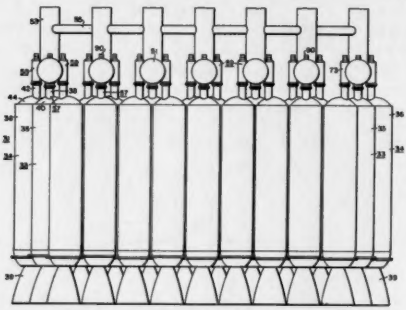
ROCKET ENGINE

Erling Frisch, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 21, 1970, Ser. No. 34,917
Int. Cl. G21d 1/00
U.S. Cl. 60—203 10 Claims

A modular nuclear rocket engine is disclosed. Each module of the engine includes a plurality of relatively small-diameter

pressure vessels each containing a plurality of fuel elements forming a nuclear core. The vessels are composed of low absorption cross section material. An individual exhaust nozzle is connected to each core to receive the propellant fluid which



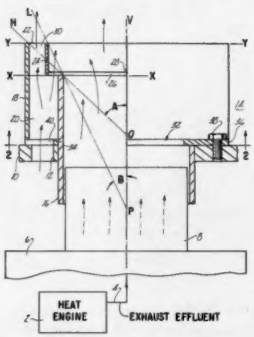
is heated by the core. Because each nozzle is relatively small it is formed of a high-temperature refractory material and is of simple structure having no cooling tubes. The modules are secured closely together to form a modular unit or engine of generally right-cylindrical configuration.

3,817,030

RADIANT ENERGY SUPPRESSOR

Otto Renius, Rochester, and Wilbert W. Bremerkamp, Warren, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 26, 1973, Ser. No. 373,829
Int. Cl. F01n *7/20*
U.S. Cl. 60—271 **8 Claims**



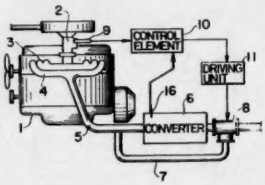
Three concentric circular cylinders having a common vertical axis form an assembly which bolts to the louvered top of the heat engine enclosure of a military vehicle. The inner cylinder receives the tailpipe of the exhaust system and terminates in a horizontal plane above the tailpipe end. The outer cylinder terminates in a second horizontal plane above the first plane. The intermediate cylinder lies between the two horizontal planes. The annular spaces between the cylinders are open-ended for the upward flow of cooling air through the spaces. The intermediate cylinder substantially narrows the cone of visibility of heated interior surfaces to infrared radiation sensors.

3,817,031

OVERHEAT PROTECTION FOR CATALYST CONVERTER

Kenji Goto, and Kiyohiko Mizuno, both of Shizuoka, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Aug. 29, 1972, Ser. No. 284,605
Claims priority, application Japan, May 9, 1972, 47-44994
Int. Cl. F02b *75/10*
U.S. Cl. 60—288 **3 Claims**



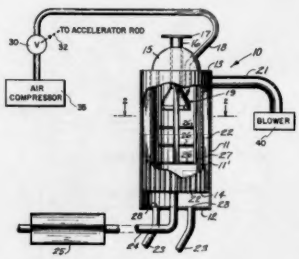
In an exhaust system of an engine having a catalyst converter in an exhaust pipe, a bypass conduit is connected to the exhaust pipe around the converter. A selector valve is operated in accordance with the engine temperature so that until the engine temperature reaches a certain value, the selector valve acts to inhibit the exhaust gases from flowing through the converter and instead routes the gases only through the bypass conduit. Further, the selector valve can be operated to prevent flow of exhaust gases through the converter when the temperature within the converter rises above a predetermined threshold valve to prevent the catalyst in the converter from being overheated.

3,817,032

AFTERBURNER FOR INTERNAL COMBUSTION ENGINE

George E. Crow, 913 Clark St., Muskegon, Mich. 49442

Continuation-in-part of Ser. No. 91,823, Nov. 23, 1970. This application May 5, 1972, Ser. No. 250,656
Int. Cl. F01n *3/14*
U.S. Cl. 60—294 **5 Claims**

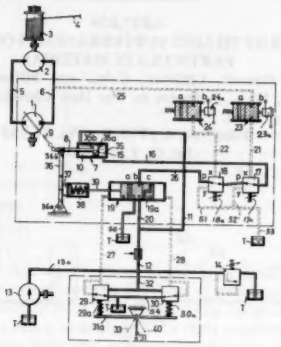


An afterburner for internal combustion engines mixes exhaust gases from an exhaust manifold of an engine with a stream of compressed air to ignite the unburned gases which then pass over heating grids. As the remaining unburned gases pass through the heated grids, they ignite and burn. The device includes means within an outer sleeve for cooling the afterburner.

3,817,033
HYDRAULIC LIFTING APPARATUS WITH CONSTANT PULL REGULATION

Wilhelm Appel, and Rolf Kordak, both of Lohr am Main, Germany, assignors to G. L. Rexroth GmbH, Lohr, Main, Germany

Filed Sept. 15, 1972, Ser. No. 289,236
Claims priority, application Germany, Sept. 17, 1971, 2146586
Int. Cl. F15b 7/00; F16h 39/46
U.S. Cl. 60—444 **10 Claims**

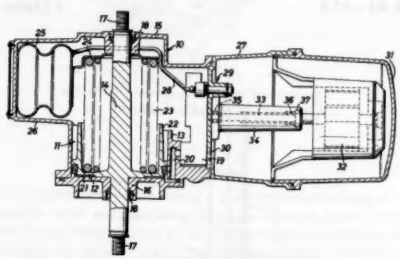


In order to exert a constant pull on a rope attached to a load and wound up on a winch by the motor of a hydrostatic transmission mounted on a floating boat moving up and down, a pressure responsive valve is actuated by a predetermined high pressure in the hydrostatic transmission when the boat and winch are raised, and relieves the pressure in a cylinder chamber of an hydraulic adjusting motor so that the volume of fluid displaced by the pump of the transmission is reduced, whereby the lifting movement is slowed down, and the pull on the rope maintained constant when the boat with the winch is raised by waves to a higher level.

3,817,034
PRESSURE EQUALIZING ARRANGEMENTS

Peter Thomas Mence Nott, Bath, England, assignor to Rotark Limited, Somerset, England

Filed Mar. 9, 1973, Ser. No. 339,711
Int. Cl. F15b 15/18, 20/00
U.S. Cl. 60—478 **10 Claims**

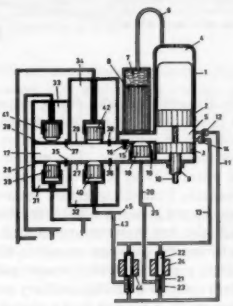


This invention relates to arrangements for equalising the pressure between two locations, at least one of which is subject to pressure variations in the conditions prevailing therein, and which include a common structure extending therebetween. The invention is particularly concerned with an arrangement for equalizing the pressure between two sealed housings one of which contains air and the other of which provides an oil reservoir which is subject to pressure variations. A bellows is mounted in the oil reservoir and its interior is in connection with the other housing through a connector providing a flameproof path mounted in a common partition wall. The arrangement greatly simplifies the seals required for a shaft extending through the common partition wall as a pressure differential across the seals is substantially eliminated.

3,817,035
VALVE CONTROL MEANS FOR CHANGING WORKING SPACE VOLUME IN STIRLING CYCLE ENGINE

Sven Anders Samuel Hakansson, Malmo, Sweden, assignor to Kommanditbolaget United Stirling, Malmo, Sweden

Filed June 30, 1972, Ser. No. 267,976
Claims priority, application Great Britain, July 7, 1971, 31824/71
Int. Cl. F03g 7/06; F25b 9/00; F01k 27/00
U.S. Cl. 60—521 **5 Claims**

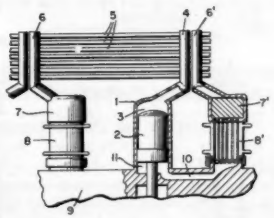


In a Stirling cycle engine of the type having a plurality of dead volume chambers selectively coupled to the engine working space to change the effective volume thereof, valve control means for the dead volume chambers is provided comprising a non-return valve and a selectively opening valve both communicating between the dead volume chamber and the working space. The selectively opening valves are of a piston type working in a cylinder controlled by means of working pressures derived from minimum or maximum pressures in the working space.

3,817,036
ARCUATE SHAPED HEAT TRANSFER PIPES

Sven Anders Samuel Hakansson, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Aug. 25, 1972, Ser. No. 283,714
Claims priority, application Great Britain, Aug. 27, 1971, 40210/71
Int. Cl. F03g 7/06
U.S. Cl. 60—526 **2 Claims**

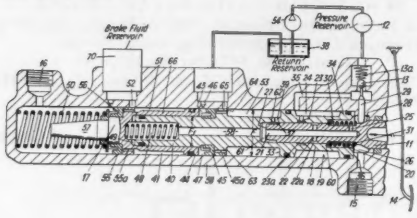


A hot gas Stirling type engine has a heater head comprising a plurality of arcuate shaped heat transfer pipes connected between regenerator and cylinder manifolds.

3,817,037
MASTER CYLINDER FOR TWO-CIRCUIT BRAKE SYSTEMS

Juan Belart, Walldorf, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,379
Claims priority, application Germany, Dec. 24, 1971, 2164605; Dec. 24, 1971, 2164606
Int. Cl. F15b 9/10
U.S. Cl. 60—552 **10 Claims**

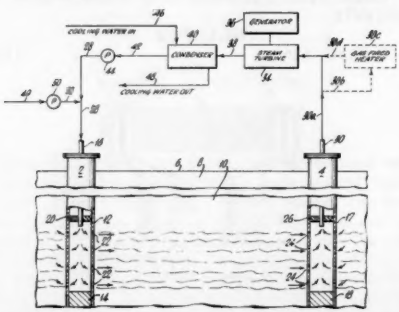


This relates to a master cylinder for a two-circuit brake system having a brake pressure medium pressure reservoir. The necessary pedal force applied by the driver is reduced to a minimum by this master cylinder. The master cylinder includes a control piston having a control surface to open a valve to apply pressure from the pressure reservoir to a first brake circuit. The control piston is slidably received in an auxiliary piston which also has the pressure applied to the brake pedal end thereof from the pressure reservoir when the valve opens. The auxiliary piston acts on a master piston which is disposed in tandem relation with the auxiliary piston to apply brake piston pressure to a second brake circuit. Due to the presence of the auxiliary piston excessive brake pedal travel due to failure of the second brake circuit is prevented. This is accomplished by the fact that the auxiliary piston when actuated by the pressure of the pressure reservoir moves the master piston until an abutment carried on an end of the master piston abuts the closed end of the master cylinder. This movement of the auxiliary piston is accomplished without movement of the control piston which is connected to the brake pedal. Thus, there is no pedal travel upon failure of the second brake circuit.

3,817,038
METHOD FOR HEATING A FLUID

Peter L. Paull, Weston, Conn., and Paul F. Kerr, Palo Alto, Calif., assignors to Texaco Development Corporation, New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,782
Int. Cl. B01d 1/00, 11/02; C01d 3/08
U.S. Cl. 60—641 **19 Claims**

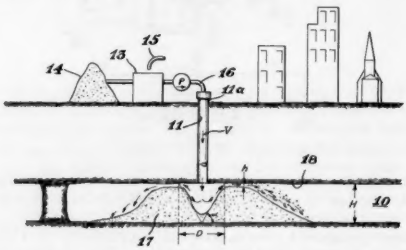


A method of heating an aqueous fluid which can be, for example, water, in a dry geothermal reservoir formation penetrated by an injection well and a production well comprising injecting the said fluid into the formation via the injection well, forcing the fluid into the formation with simultaneous heating and finally recovering the heated fluid via the production well. Utilizing heat exchangers at the surface, the heated fluid may be employed to supply process heating requirements for steam making, preheating of refinery streams such as crude oil feed to distillation units, salt evaporation, etc. Alternatively, where the heated fluid recovered via the production well is steam, it can be employed directly, for example, in a turbine for power generation.

3,817,039
METHOD OF FILLING SUBTERRANEAN VOIDS WITH A PARTICULATE MATERIAL

John D. Stewart, Littleton, Colo., and Milton E. Heslep, Casper, Wyo., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 4, 1970, Ser. No. 86,755
Int. Cl. E21f 15/08
U.S. Cl. 61—35 **8 Claims**

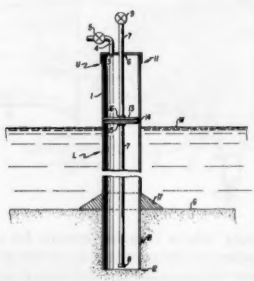


A method is provided for backfilling a subterranean void, e.g. a mined out cavity such as a tunnel, etc. An aqueous suspension of solid particles (fill material) is injected through a conduit which connects the void with a suitable work surface (said conduit and void consisting of a closed pressurized system during injection) and into the void at a certain critical minimum rate.

3,817,040
PILE DRIVING METHOD

Elbert M. Stevens, 1000 N. Alamo, San Antonio, Tex. 78215

Filed July 3, 1972, Ser. No. 268,516
Int. Cl. E02d 7/18; B63b 21/26
U.S. Cl. 61—53.5 **8 Claims**



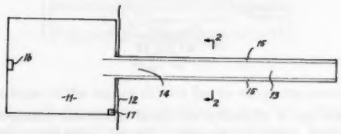
A method for driving tubular piling into ground beneath water in which the end of the piling is sealed against the ground and a vacuum is applied in the upper end of the piling

to draw the piling downward and to draw a portion of the ground into the piling. Thereafter, the piston effect may be used to adjust the level of the piling.

3,817,041
SHIP SLIPPING SYSTEM

Francis Anthony Pownall, 45 Melville Beach Rd., Applecross, Australia (6153)

Filed May 10, 1973, Ser. No. 358,944
Int. Cl. B63c *3/00*; **A63g** *21/04*; **B63b** *1/34*
U.S. Cl. 61—67 **6 Claims**

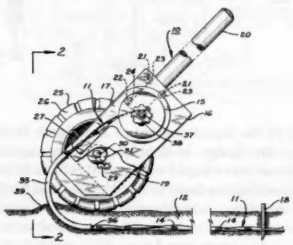


A system for slipping ships which comprises grading an area of the sea floor extending from the shore to water sufficiently deep to float the ship to be slipped, providing the graded area with a smooth surface, attaching one or more supporting pads to the hull of the ship, said supporting pads being provided with one or more openings through which water can be discharged downwardly onto said smooth surface to provide a "ground effect" to support said ship and means for pulling the ship up the smooth surface onto the shore.

3,817,042
SEED PLANTING IMPLEMENT

Martin I. Sanderson, 132 Grove St., Salinas, Calif. 93901

Filed June 23, 1972, Ser. No. 265,659
Int. Cl. F16l *1/00*; **A01b** *13/02*; **E02f** *5/02*
U.S. Cl. 61—72.6 **5 Claims**

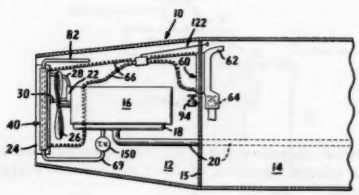


An implement for planting a seed tape comprising a water soluable strip encapsulating seeds at spaced apart locations therealong and provided in rolled form upon a reel from which the strip can be unwound. The implement is operative to concurrently form a furrow in relatively soft or previously prepared soil, lay the seed strip within the furrow along the bottom thereof, and backfill the furrow to cover the strip as the device is moved continuously along the ground in which the strip is being planted. The device includes handle-equipped frame structure having a ground-engageable wheel rotatably supported thereon, plow structure carried by the frame and providing a plowshare operative to form the furrow, and guide structure which lays the strip within the furrow.

3,817,043
AUTOMOBILE AIR CONDITIONING SYSTEM EMPLOYING THERMOELECTRIC DEVICES

Jose C. Zoleta, Elmhurst, N.Y., assignor to Petronilo C. Constantino & Associates, Manila, Philippines

Filed Dec. 7, 1972, Ser. No. 312,895
Int. Cl. F25b *27/00*
U.S. Cl. 62—3 **2 Claims**

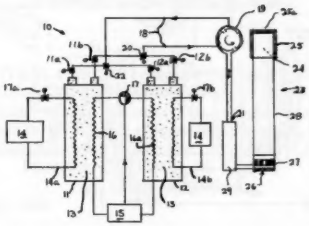


An automobile air conditioning system is disclosed in which the engine exhaust provides a heat source for operating a Seebeck generator used for supplying electrical current to a Peltier unit located in the passenger space for removing heat from the latter.

3,817,044
PULSE TUBE REFRIGERATOR

Alexander Daniels, Briarcliff Manor, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,814
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **7 Claims**



A refrigeration apparatus including a pulse tube and regenerator operable with hydrogen gas and a compressor, the gas being cyclically flowed into and out of the pulse tube. The source of this gas and the compressor being a container of lanthanum nickel ($LaNi_5$) which when cooled absorbs a large quantity of the gas, and when heated desorbs rapidly a large quantity of the gas which tends to expand the flows under pressure to the pulse tube where refrigeration is produced.

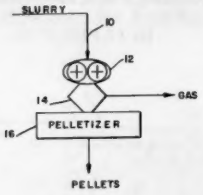
3,817,045
SYSTEM FOR DISPENSING CARBON DIOXIDE

Allen V. Muska, Berkeley Heights, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Oct. 3, 1972, Ser. No. 294,734
Int. Cl. F25j *1/00*
U.S. Cl. 62—10 **10 Claims**

A system for dispensing carbon dioxide, particularly a slurry of particulate solid carbon dioxide dispersed in liquid carbon dioxide, so as to produce solid carbon dioxide in a form suitable for use as a refrigerant. The carbon dioxide is expanded from a source at a pressure above 60 p.s.i.g. to a zone at atmospheric pressure (0 p.s.i.g.) through a positive displacement device which transports a discrete, isolated charge of

carbon dioxide from the high pressure source to the atmospheric zone without significant pressure drop. The head pressure on the device, the quantity of liquid carbon dioxide



transported, slippage in the device, etc., are controlled to provide for reliable dispensing of slurry, e.g., without plugging of the system.

3,817,046

ABSORPTION-MULTICOMPONENT CASCADE REFRIGERATION FOR MULTI-LEVEL COOLING OF GAS MIXTURES

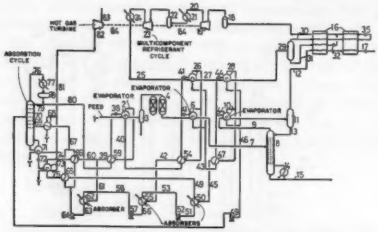
Ichizo Aoki, Yokohama, and Yoshitsugi Kitsukawa, Tokyo, both of Japan, assignors to Chinzoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan and Air Products and Chemicals Inc., Wayne, Pa.

Filed Nov. 29, 1971, Ser. No. 203,073

Claims priority, application Japan, Nov. 28, 1970, 45-104541

Int. Cl. F25j *1/00, 1/02, 5/00*

U.S. Cl. 62—40 **8 Claims**



The invention provides a unique combinational cooling sequence particularly useful for liquefication of natural gas and employs a multi-component cooling cycle coupled to an absorption refrigerant cycle, and the invention utilizes the exhaust from a driver for compressors in the multi-component cycle to effect warming in the absorption refrigerant cycle.

3,817,047

THERMAL JUNCTION FOR A CRYOGENIC VESSEL

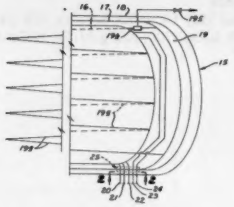
Robert S. Hampton, Livermore, Calif., assignor to Lox Equipment Company, Livermore, Calif.

Filed Dec. 7, 1971, Ser. No. 205,526

Int. Cl. F17c *13/00*

U.S. Cl. 62—45 **7 Claims**

A thermal junction for a cryogenic vessel to define a thermal resistance between a flow conduit and wall structure penetrated thereby. The temperature of the conduit may change significantly between flow and no-flow conditions, and the idealized objectives are that of maximizing heat flow between the conduit and wall structure at no-flow conditions and to minimize the heat flow therebetween at flow conditions. The thermal junction mechanism includes a support plate having an opening through which the flow conduit projects and along which the support plate and conduit are welded to each other to establish a good thermal path therebetween. The wall structure is provided with a large opening at the point of penetration thereof by the flow conduit, and such opening is substantially larger than the conduit so as to prevent contact therebetween. The support plate is secured to the wall structure in contiguous juxtaposition



therewith by a plurality of hand-tightened fasteners that respectively extend through aligned apertures provided therefor in the plate and wall structure. At least one aperture in each of the aligned pairs thereof is substantially larger than the associated fastener so as to permit transverse displacements of the support plate relative to the wall structure so as to prevent stress development therebetween.

3,817,048

DEWATERING SLUDGES

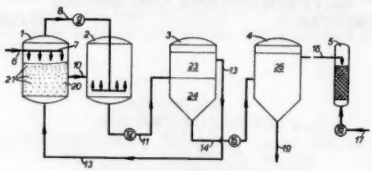
Michael John Burley, Tetsworth, England, assignor to The Water Research Association, London, England

Filed July 7, 1972, Ser. No. 269,593

Claims priority, application Great Britain, July 13, 1971, 32725/71

Int. Cl. F25d *17/02*

U.S. Cl. 62—64 **11 Claims**



Reduction of the liquid content of a sludge is facilitated by first freezing the sludge in droplet form by contacting the droplets with an inert liquid refrigerant which is immiscible with the suspending medium of the sludge, and then thawing the frozen droplets. Advantageously, the refrigerant is a liquefied gas and the latent heat of freezing is absorbed as heat of evaporation, the evaporated gas subsequently being used to thaw the frozen droplets. The process is particularly useful for water treatment sludges.

3,817,049

AIR CONDITIONING APPARATUS AND METHOD

Alexander T. Lim, Syracuse, and David F. Bryans, Cazenovia, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

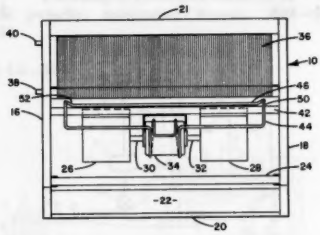
Filed Feb. 15, 1973, Ser. No. 332,841

Int. Cl. F25d *21/00*

U.S. Cl. 62—80 **7 Claims**

An air conditioning apparatus provided for supplying conditioned air into a space and including a motor driven fan provided for routing air to be conditioned in heat transfer relation with a relatively cold heat exchange medium. Condensate

formed as a result of the cooling of the air is collected in a condensate pan which is positioned beneath the heat exchange coil. A pipe defining a closed circuit and having a volatile fluid therein is operable to transfer the heat produced as a result of



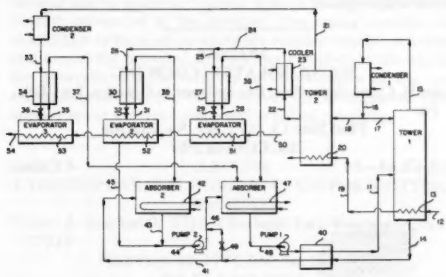
the operation of the motor driven fan to warm the condensate prior to its collection in the condensate pan. The warming of the condensate prevents secondary condensate from being formed on the surface of the condensate pan.

3,817,050

TWO-STAGE AMMONIA ABSORPTION REFRIGERATION SYSTEM WITH AT LEAST THREE EVAPORATION STAGES

David L. Alexander, Fishkill, and James R. Muenger, Beacon, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,904
Int. Cl. F25b *15/04*
U.S. Cl. 62—101 **6 Claims**



A two-stage ammonia absorption refrigeration system can be operated with at least three evaporators maintained at decreasing temperatures but only two pressures by separating two ammonia streams of different ammonia purities from the strong ammonia water solution produced by the two stages of ammonia absorption. The novel system shows advantages over a three-stage ammonia absorption system previously required for the operation of three evaporators at decreasing temperatures.

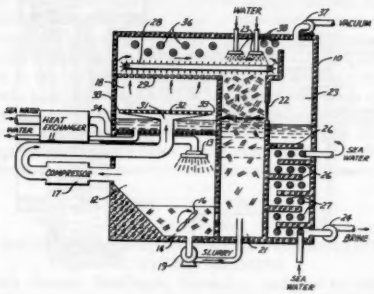
3,817,051

VACUUM FREEZING, VAPOR COMPRESSION APPARATUS

Joseph Seliber, Wilmette, Ill., assignor to Pacific Lighting Service Co., Los Angeles, Calif.

Continuation of Ser. No. 154,129, June 17, 1971, abandoned.
This application July 13, 1973, Ser. No. 380,716
Int. Cl. B01d *9/04*
U.S. Cl. 62—123 **8 Claims**

Method and apparatus are provided for recovering a solvent from a solution, particularly useful for recovering potable water from saline water. A unitary apparatus for minimum heat exchange with the environment is described, with the interior divided into a plurality of chambers. Saline water is flash evaporated in an evacuated chamber to produce water vapor, ice crystals, and a somewhat more concentrated brine. The brine-ice slurry is transferred to a washing column wherein it moves upwardly by hydraulic action to overflow the brine into a brine chamber. Ice floating in the wash or separation chamber is cleansed of brine by fresh water sprays. Ice at the



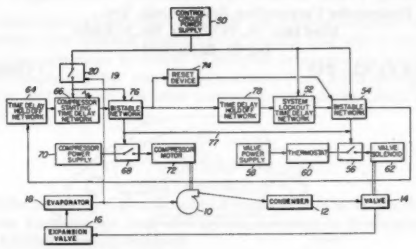
top of the separation chamber is scraped by a continuous conveyor to the top of a melting chamber, into which it is free to drop through a grate. Water vapor from the freezing chamber is compressed and discharged into the bottom of the melting chamber with a sufficient flow to form a fluidized bed with the ice crystals entering the top of the chamber. Heat exchange between the water vapor and ice crystals causes condensation and melting, respectively, to produce potable water. Refrigeration coils may be provided for condensing excess water vapor in a flow path beyond the fluidized bed.

3,817,052

CONTROL CIRCUIT FOR PREVENTING RAPID RECYCLING IN AUTOMATIC SYSTEMS

Daniel Joseph Connelly, Allendale; George Henry Reuter, Glen Rock, and James A. Rudy, Ridgewood, all of N.J., assignors to Melchior Armstrong Dessau, Inc., Ridgefield, N.J.

Filed Aug. 2, 1972, Ser. No. 277,156
Int. Cl. G05d *23/32*
U.S. Cl. 62—158 **26 Claims**

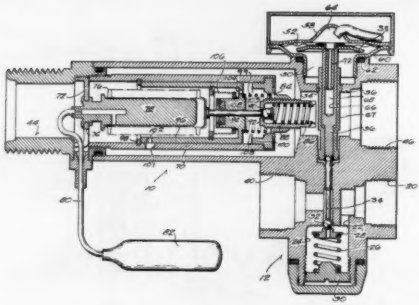


Undesirable rapid recycling of an automatic system such as a recycling pumpdown refrigeration or air conditioning system is prevented by a control circuit which inhibits initiation of an operating cycle for a predetermined interval of time following completion of the preceding operating cycle. When an operating cycle can begin, signals for initiating the cycle may be further delayed by another, preferably randomly selected time interval so that simultaneous starting of a large number of units in a multiunit installation is prevented.

3,817,053
REFRIGERATING SYSTEM INCLUDING FLOW CONTROL VALVE

Charles D. Orth, Cedarburg, Wis., assignor to Controls Company of America, Schiller Park, Ill.

Filed Nov. 10, 1972, Ser. No. 305,258
Int. Cl. F25b *41/04*
U.S. Cl. 62—210 4 Claims

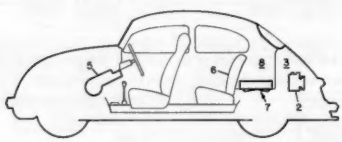


The compressor delivers hot compressed refrigerant to the condenser. Flow from the condenser to the evaporator is regulated by a thermostatic expansion valve having its sensing points (pressure and temperature) located in the compresser suction line downstream of an evaporator outlet control valve which is the new part in this application. This control valve has a piston type valve which is operated by a pilot valve actuated by the bellows in the suction line. The bellows is part of a charged system incorporating the capillary tube and the feeler bulb positioned in the evaporator fins. The charging fluid is selected to have a different thermal coefficient of expansion than the bulb so that the pilot valve will close at a selected temperature indicative of incipient icing conditions in the evaporator as may be found in air conditioning systems in which the compressor capacity can exceed the evaporator capacity (typical in automotive air conditioning). When the pilot valve closes pressure on the piston valve balances and the spring closes, the piston valve leaving a bleed port open to insure proper lubrication and cooling of the compressor.

3,817,054
AUTOMOBILE AIR CONDITIONING SYSTEM

Samuel Frank Adams, New Braunfels, Tex., assignor to Heatransfer Corporation, San Antonio, Tex.

Filed Dec. 14, 1972, Ser. No. 315,085
Int. Cl. B60h *3/04*
U.S. Cl. 62—243 7 Claims

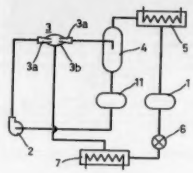


An air conditioning system for a rear mounted air cooled engine automobile having a compressor mounted in the engine compartment, an evaporator mounted in the passenger compartment and a condenser assembly mounted in the rear parcel compartment adjacent the engine. The condenser assembly has a condenser coil communicating with the outside atmosphere through an opening in the parcel compartment and a fan communicating with the outside atmosphere through a second opening in the parcel compartment.

3,817,055
REFRIGERATION SYSTEM

Toshio Hosokawa, Midorigaoka 2-6-5-503, Meguro-ku, Tokyo, Japan

Filed June 14, 1973, Ser. No. 369,963
Int. Cl. F25b *43/02*
U.S. Cl. 62—468 2 Claims

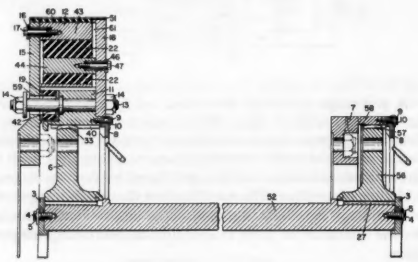


A refrigeration system, in which a venturi tube consisting of two closely opposite nozzles, the neighbouring part of such opposing ends of the nozzles being tightly closed so as to form a suction port, is arranged in the refrigerant cycle, and the exit of the venturi tube is connected with a gas-liquid separator, the upper end of which is connected to a refrigerant tank by way of a condensor, and further said refrigerant tank is connected to an evaporator by way of an expansion valve, the exit of the evaporator being connected with said suction port of the venturi tube, while, the bottom end of the gas-liquid separator is directly connected with the refrigerant tank or a refrigerator oil tank and said refrigerant tank or refrigerator oil tank is further connected to the entrance of the venturi tube through a driving pump. In the present system, it results in an advantage that the power required for driving the system is markedly reduced.

3,817,056
SOUND ISOLATION COUPLING

John H. Crankshaw, Erie, Pa., assignor to Dynetics, Inc., Erie, Pa.

Filed June 13, 1972, Ser. No. 262,306
Int. Cl. F16d *3/64*
U.S. Cl. 64—14 4 Claims



The specification discloses a rotating shaft coupling for connecting two shafts to transmit torque. The coupling is especially suited for high speeds for use by itself as a coupling between two shafts or in conjunction with another coupling such as a gear type coupling. Elastomeric material is molded in a form to provide maximum radial stiffness to achieve maximum load carrying capacity in a minimum diameter. The elastomeric material is contained radially to resist large radial loads and to maintain dynamic balance in spite of high centrifugal forces associated with high speed operation.

3,817,057

PROTECTIVE ARRANGEMENT FOR A ROTARY POWER TRANSMISSION COUPLING

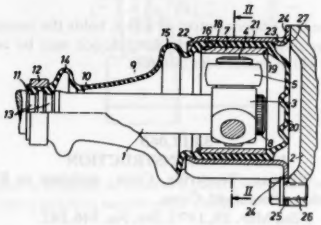
Michel Orain, Conflans-Sainte-Honorine, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed July 7, 1972, Ser. No. 269,528

Claims priority, application France, Feb. 18, 1972, 72.05581

Int. Cl. F16d *3/84*

U.S. Cl. 64—32 F 8 Claims



An insulative integral protective arrangement for a rotary power transmission system includes a sealing sleeve having its ends connected in fluid-tight manner to a shaft constituting the driving or driven element and to a generally annular sealing member disposed between this shaft and the other of the driving and driven members. The end which is connected to the generally annular member covers a relatively large area thereof and is squeezed against it by a casing which is not directly connected to the member. The casing provides the connection to the shaft to which the annular member is linked, and means are provided for forming a fluid-tight closure for the generally annular member in an extension of the corresponding end portion of the sleeve. The arrangement finds application in universal joints and in sliding couplings.

3,817,058

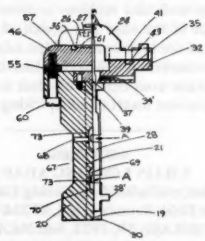
CYLINDER AND DIAL CONSTRUCTION FOR KNITTING MACHINES

Victor J. Lombardi, 2715 Charlotte Ln., Burlington, N.C. 27215

Filed Sept. 22, 1971, Ser. No. 182,822

Int. Cl. D04b *35/28*

U.S. Cl. 66—8 7 Claims



Spaces and passageways are formed behind the knitting elements in cylinder constructions associated with circular knitting machines and cut-out portions or circumferential grooves are provided in the walls which constrain the movement of the elements and such cut-out portions communicate with the spaces to allow lubricant applied from at least one position outwardly of the knitting elements and at locations juxtaposed to the cut-out portions of the walls to pass between the knitting elements into the spaces which include lubricant reservoirs to (*a*) facilitate the lubrication of these elements, and (**b**) to improve heat transfer away from portions of the machine at which frictional heat is produced by the sliding action within their respective slots of sinkers, needles, or other knitting instrumentalities. Also, a provision is made for improved lubrication between the needle and the cylinder by relieving a back portion of the needle to create a lubricant reservoir in the offset portion of the needle. Further, lubricating means positioned outwardly of the knitting elements are provided to apply lubricant to at least two sides of the knitting elements. In addition, a provision is made to lubricate the cylindrical bearing surface of the sleeve gear member on which the cylinder is slidably mounted for relatively vertical movement.

3,817,059

METHOD AND APPARATUS FOR CONTROLLING A KNITTING MACHINE

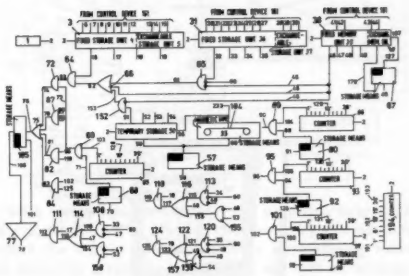
Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Postfach, Germany

Filed Apr. 18, 1972, Ser. No. 245,141

Claims priority, application Germany, Apr. 28, 1971, 2120892

Int. Cl. D04b *15/60*

U.S. Cl. 66—154 A 20 Claims



Knitting machine control systems which allow flexibility of control with minimal complexity of circuits and information storage apparatus by means of program arrangements which selectively call for control information from fixed storage units and from an eraseable temporary storage unit which is fed from a magnetic tape.

3,817,060

PATTERN DISCS

Frederick Henry Carrotte, Kirby Muxloe, and John Ernest Ellis, East Goscote, both of England, assignors to Courtaulds Limited, London, England

Filed May 26, 1972, Ser. No. 257,273

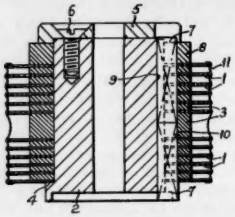
Claims priority, application Great Britain, Sept. 2, 1971, 40953/71

Int. Cl. D04b *15/66*

U.S. Cl. 66—156 20 Claims

In an uncropped pattern element for a knitting machine which may be a pattern disc or a pattern wheel assembled from a plurality of pattern discs, the bits of the element are adherent to means which hold them captive to the pattern element and will retain them after the bits have been severed from the pattern element. The means for holding the bits may

be a moldable material, for example wax or a synthetic plastics material, introduced between the bits or in which the bits are embedded. Alternatively, the means for holding the bits may



comprise one or more sheets of flexible sheet material wrapped round the pattern element. A method of preparing a pattern element for a knitting machine is also described.

3,817,061

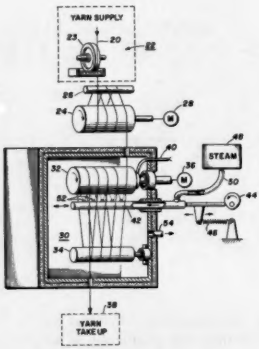
HEATED ROLL DEPOSIT CLEANING APPARATUS

Albert H. Bruner, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 88,592, Nov. 12, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,409

Int. Cl. D06c *1/08, 7/02*

U.S. Cl. 68—5 D **4 Claims**



Steam is jetted against the circumferential path of contact of yarn on a roll heated to above 100°C. This greatly reduces buildup of yarn spin-finish and "monomer" on the hot roll, thus reducing the frequency at which the process must be interrupted for cleaning the roll.

3,817,062

LOCK DEVICE FOR SECURING AN APERTURED MEMBER

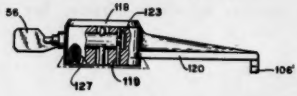
Mortimer A. Randel, 21 Primrose Ln., Valley Stream, N.Y. 11580

Continuation-in-part of Ser. No. 244,465, April 17, 1972, Pat. No. 3,769,821. This application Oct. 2, 1972, Ser. No. 293,758

Int. Cl. E05b *65/48, 67/26*

U.S. Cl. 70—11 **1 Claim**

A flat cylindrical housing having a channel in its flat surface for fitting over abutting flange ends connected to the members to be locked together, the flanges having an aligned aperture therein. A lock cylinder having a shaft with retaining means thereon is situated in a passageway through the housing transverse to the channel. The shaft fits within the aperture and the



retaining means, under control of a key, holds the housing on to the flange ends. The same locking device may be used to lock a hasp which passes over a staple.

3,817,063

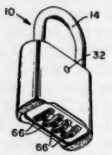
PADLOCK CONSTRUCTION

Merton S. Williams, Terryville, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Mar. 29, 1973, Ser. No. 346,142

Int. Cl. E05b *37/06, 67/00*

U.S. Cl. 70—24 **5 Claims**



A combination or permutation padlock has a case which supports a movable shackle and contains a pair of locking bolts movable into locking engagement with the legs of the shackle to retain it in a locked position. A control assembly received in the case includes a frame which supports a movable blocking member and a permutation mechanism for controlling movement of the blocking member to and from a blocking position wherein the blocking member prevents retraction of the locking bolts from engagement with the shackle legs. The frame top wall cooperates with the upper wall of the case to confine the locking bolts for movement into and out of locking engagement with the shackle legs. A filler block supported by the frame provides structural support for the frame top wall and receives a drive pin which extends through a wall of the case and a wall of the frame to retain various parts of the lock in assembled relation. Integral annular flanges on combination wheels which comprise the permutation mechanism cooperate with slots in the bottom wall of the frame to prevent insertion of a picking tool into the case.

3,817,064

CHAIN LOCKING ADAPTOR

Aaron D. Sallee, c/o Sallee Engineering Company, 512 Avenue A, Freeman Field, Seymour, Ind. 47274

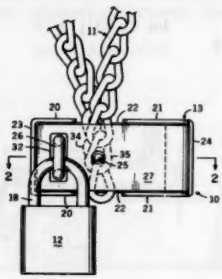
Filed Apr. 19, 1971, Ser. No. 135,206

Int. Cl. E05b *73/00*

U.S. Cl. 70—58 **2 Claims**

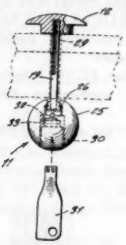
The adaptor includes a base attachable to a support and having a hingedly connected cover. A pin member and a hasp member are attached to the base and the cover is apertured to

receive said members therethrough. The pin member is adapted to connect the chain to the adaptor and the hasp



member is adapted to receive a padlock to lock the adaptor in the closed position securing the chain.

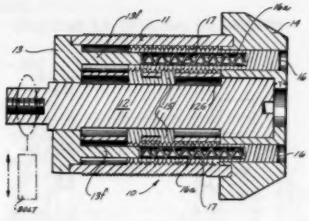
3,817,065
LOC N'BOLT
Paul F. Sander, 3366 Park Ave., Wantagh, N.Y. 11793
Filed Mar. 20, 1973, Ser. No. 342,929
Int. Cl. F16b *41/00*; **E05b** *73/00*
U.S. Cl. 70—232 **1 Claim**



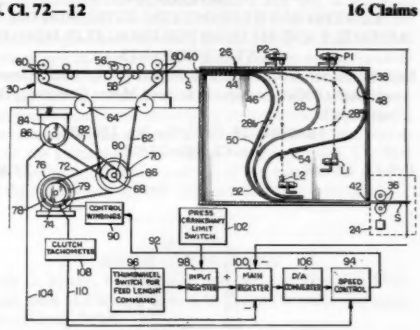
An improved locking device for securing portable equipment such as office business machines and factory small machinery and prevent theft thereof; the device consisting of a bolt connecting the equipment to any stationary object, only a bolt head protruding from the equipment or object, and the bolt head being enclosed within a free spinning ball so to prevent an unauthorized person to turn and unscrew the bolt, and a key operated lock being removable from the ball so to expose the screw driver slot on the bolt head so to allow turning and removal of the bolt so to disconnect the equipment from the anchoring stationary object.

3,817,066
LOCK
Rune S. Pearson, 22625 Ellinwood Dr., Torrance, Calif. 90505
Filed Dec. 26, 1972, Ser. No. 318,663
Int. Cl. E05b *19/18, 25/00, 27/08*
U.S. Cl. 70—363 **11 Claims**

A resettable lock of the cylinder type constructed of coaxial cylinders, one inside the other. The rotatable cylinder slidably mounting a plurality of tumblers. The inner wall of the outer cylinder having a radial opening functioning as the open terminal for the tumblers when a key inserted into the lock contacts the various pusher elements and positions all the associated tumblers at the terminal simultaneously. The lock is rendered pick resistant by an element overlying the tumblers.



3,817,067
STOCK SUPPLY SYSTEM
John E. Voorehes, Sidney, and Robert M. Carabbio, St. Marys, both of Ohio, assignors to The Minster Machine Company, Minster, Ohio
Filed Sept. 5, 1972, Ser. No. 286,123
Int. Cl. B21c *19/00*; **B65h** *23/22*
U.S. Cl. 72—12 **16 Claims**

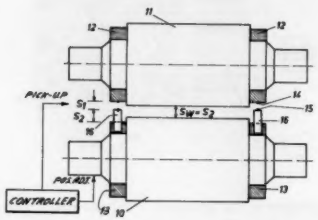


A stock supply system, especially for supplying strip stock from a supply thereof to a feed device pertaining to a machine in which the supply system includes a straightening roller stand driven by a variable speed drive and with an arrangement provided for maintaining a loop in the stock being supplied between the straightening roller stand and the feed device. The feed device operates intermittently to supply the stock to a machine and the machine supplies a signal on each cycle that tends to increase the speed of the variable speed drive. A feedback signal tends to reduce the speed of the variable speed drive thereby tending to maintain the aforementioned stock loop at about a fixed size. When the loop exceeds a certain length, the speed of the drive is reduced, and if the loop shortens beyond a predetermined amount, the machine being fed and the feed device and the roller stand come to a halt.

3,817,068
ROLL GAP AND GAP ERROR MONITORING DEVICE
Friedrich-Wilhelm Meyer, Bradenburger Strasse 37, Varrel I, Germany
Filed May 10, 1973, Ser. No. 358,837
Claims priority, application Germany, May 20, 1972, 2224909
Int. Cl. B21b *37/08*
U.S. Cl. 72—21 **5 Claims**

A controller for the width of the gap between a pair of rolls in a rolling mill, maintaining that gap constant at a predeter-

mined level, uses two radially facing surfaces adjacent the ends of the rolls. The radial distance of one of the surfaces is adjustable as command value equivalent of desired gap width.



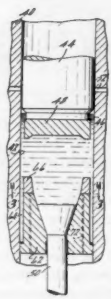
The controller operates to maintain the distance between the surfaces constant independently from the level of adjustment of the one surface.

3,817,069

CONTINUOUS HYDROSTATIC EXTRUSION DIE ASSEMBLY AND METHOD FOR USING IT IN FORMING EXTRUDED PARTS

Gotz S. Hauser, Southfield, and Robert B. Melmoth, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 25, 1972, Ser. No. 256,882
Int. Cl. B21c *23/08*
U.S. Cl. 72—60 **2 Claims**



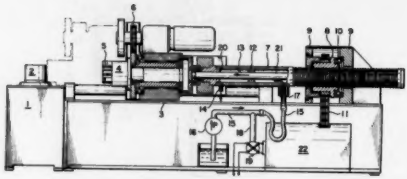
An extrusion die assembly and method for extruding circular billets with a relatively high length-to-diameter ratio comprising an extruding die located in one end of a sealed container which is adapted to receive a hydraulic ram, the ram being actuated by a hydraulic press, means for positioning and locating a billet in proper registry with respect to the die, means for introducing fluid into the chamber around the billet as the ram is withdrawn, the billet being extruded hydrostatically through the die as the ram is subsequently advanced in the fluid chamber, the billet forcing the end of the preceding billet through the die as it is advanced toward the entrance region of the die whereby a continuous extrusion of successive billets may be achieved as each billet is subjected to hydrostatic loading, the contiguous relationship of the billets preventing hydrostatic shock due to expulsion of a billet from the die and sudden decompression of the fluid.

3,817,070

MACHINE FOR NON-CUTTING FORMING OF METALS

Erich Ribback, Maximiner Acht 39, 55 Trier, Germany

Filed Oct. 3, 1972, Ser. No. 294,718
Claims priority, application Germany, Oct. 5, 1971, 2149577
Int. Cl. B21j *13/10*
U.S. Cl. 72—76 **8 Claims**



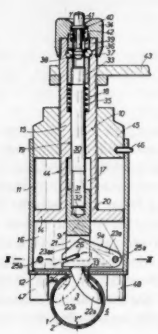
A machine for the non-cutting forming of metal in a hammer forging machine having a feed device for rotatingly feeding the material to the machine, in which clamping means is mounted on the machine frame and coordinated with the hammer machine, and is alternately driven by a hyraulically and mechanically acting mechanism towards the tools of the machine.

3,817,071

DEVICE FOR FASHIONING A FLANGE ON A WALL, AND MORE PARTICULARLY ON A PIPE WALL

Jean Ferdinand Chalvignac, Reims, France, assignor to VIRAX, Paris, France

Filed Mar. 19, 1973, Ser. No. 342,375
Claims priority, application France, Mar. 20, 1972, 72.10577
Int. Cl. B21d *19/00*
U.S. Cl. 72—120 **5 Claims**



A device for fashioning a flange on the wall of a pipe, comprising a forming tool which passes through a hole previously drilled through the pipe wall and is possessed of rotation about and translation along an axis merging with the geometrical axis of said hole. The forming tool includes two forming members which are symmetrical in relation to said rotation/translation axis. Adjustment means allow varying the working diameter of the tool.

3,817,072

TWISTING APPARATUS

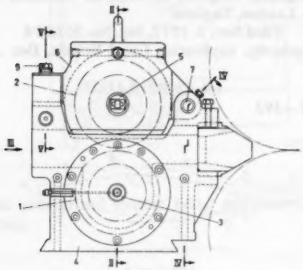
Karl-Heinz Balve, Hilchenbach-Dahlbruch, Germany, assignor to Morgan Construction Company, Worcester, Mass.

Filed Apr. 12, 1972, Ser. No. 243,336

Claims priority, application Germany, Apr. 17, 1971, 2118725

Int. Cl. B21b 41/08

U.S. Cl. 72—231 3 Claims



A twisting apparatus for use in multi-strand merchant bar and/or wire rod mills. The apparatus includes one twist roll mounted on a fixed housing and another twist roll mounted on a hood which is supported by and pivotally adjustable relative to the fixed housing, the said pivotal adjustment providing a means of varying the twist being imparted to the rolled strand passing between the two twist rolls.

3,817,073

HYDRAULIC EXTRUSION PRESSES

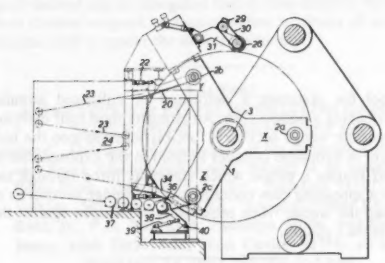
Gerald William Grant, Poole, England, assignor to Fielding Plant Design Limited, Bournemouth, Hampshire, England

Filed Jan. 31, 1972, Ser. No. 222,046

Claims priority, application Great Britain, Feb. 8, 1971, 4112/71

Int. Cl. B21c 23/00

U.S. Cl. 72—263 17 Claims



A hydraulic extrusion press which has separate die loading and unloading stations and a die carrier provided with a number of spaced die accommodation means, the arrangement allowing die loading and unloading to occur simultaneously.

3,817,074

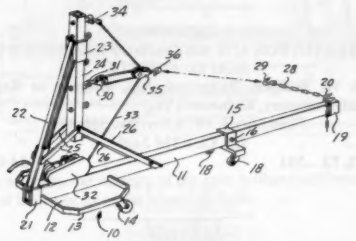
AUTO BODY AND FRAME PULLER

James B. Crosthwaite, 12348 N. Highway 99, Space 52, Lodi, Calif. 95240

Filed Sept. 12, 1972, Ser. No. 288,399

Int. Cl. B21d 1/12

U.S. Cl. 72—302 5 Claims



An auto body and frame puller which includes a generally horizontal box girder base member supported on casters for moving from place to place. An upright post is supported from the base member and has a plurality of vertically spaced eyes for attachment of one block of a block and fall. A winch on the base member is provided for winding in the block and fall cable under power. A hook is provided on a second block of the block and fall for attachment to a portion of the frame to be straightened and a second hook on the outer end of the base member has a chain attached thereto for connection to the opposite side of the frame to be straightened. Operation of the winch causes the second block to move toward the post to pull on the portion of the frame to be straightened. The first block can be hooked into anyone of the eyes on the post to vary the direction of the pull with respect to the horizontal.

3,817,075

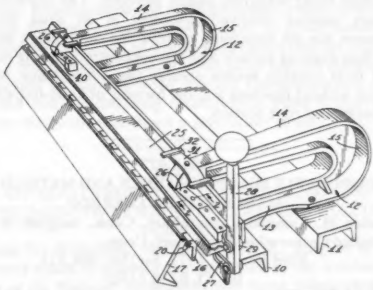
SHEET METAL BRAKE

Walter G. Marsh, Birmingham, and James J. Rhoades, Westland, both of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Filed Mar. 1, 1973, Ser. No. 336,991

Int. Cl. B21d 11/04

U.S. Cl. 72—319 10 Claims



The brake for bending sheet material disclosed herein comprises a pair of spaced base rails on which C-shaped members are positioned at longitudinally spaced points. A first member is fixed on the lower arms of the C-shaped members and has a clamping surface. A second member having a bending surface is hinged to the first member. An anvil member is interposed between the anvil member and the upper arms of the C-shaped members. The pressure member has wedges thereon

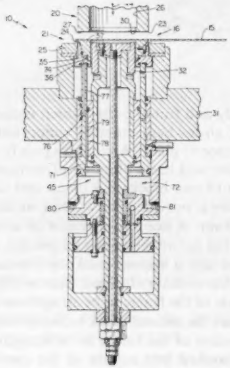
which function when the pressure member is translated longitudinally to apply pressure to the anvil member. A handle is pivoted to the first member at one end and is operatively connected to the pressure member for shifting the pressure member. Novel means are provided between the wedges and the anvil member for adjusting the pressure along the anvil member.

3,817,076

APPARATUS FOR AND METHOD OF DRAWING A CUP-SHAPED ARTICLE

Joseph W. Wallace, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 3, 1973, Ser. No. 356,964
Int. Cl. B21d *24/08*
U.S. Cl. 72—351 **14 Claims**



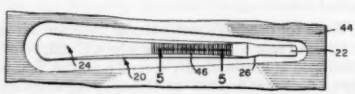
An apparatus for and method of drawing a cup-shaped article from a flat sheet blank wherein the apparatus comprises a first die structure having a die cavity therein and having a first drawing surface and a second die structure having a die center adapted to be received within the die cavity and having a pressure pad assembly provided as a part of the second die structure and such assembly comprises a plurality of concentric drawing surfaces which include an outer drawing surface and an inner drawing surface, with the outer and inner drawing surfaces being relatively axially movable. The apparatus has means causing relative movement in an axial direction between the die structures to draw the sheet blank between the first drawing surface and the concentric drawing surfaces and fluid cushion means assures the entire blank may be drawn without pinching and the forming of knife-like edges in its peripheral edge portion.

3,817,077

DISPOSABLE SCALPEL HANDLE AND METHOD OF MANUFACTURE THEREOF

Clinton M. Cummings, Southbury, Conn., assignor to Acme United Corporation, Bridgeport, Conn.

Filed Nov. 14, 1972, Ser. No. 306,322
Int. Cl. B21k *1/02*
U.S. Cl. 72—376 **12 Claims**



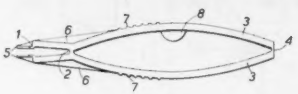
A disposable scalpel handle adaptable for use by either right handed or left handed surgeons is produced in a single press swaging operation, in which there is no leftover material or "flash" which has to be removed. Since the disposable scalpel handle produced is perfectly symmetrical about its central axis, a blade can be mounted to either side of the blade holding portion of the scalpel, thereby providing a scalpel adaptable for use by either right handed or left handed surgeons.

3,817,078

REMOVAL DEVICE

David Arthur Reed, and David Frederick Weston, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 1, 1972, Ser. No. 302,674
Claims priority, application Great Britain, Dec. 29, 1971, 60394/71
Int. Cl. B21d *41/02*
U.S. Cl. 72—392 **4 Claims**



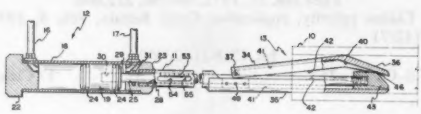
A wound clip removal device made in a single piece of plastics material and having jaws spaced apart to engage with the wound clip, a fulcrum between the jaws and a bow located on the opposite side of the fulcrum for opening the jaws further on compression of the bow.

3,817,079

SPREADING TOOL FOR RESTORING THE SHAPE OF ANNULAR PRODUCTS

Jack E. Priester, 1560 Marsha Ave., Modesto, Calif. 95350

Filed Dec. 7, 1972, Ser. No. 312,853
Int. Cl. B21d *41/02*
U.S. Cl. 72—392 **6 Claims**



A tool for restoring a deformed or collapsed annular product having a hollow core. An elongate rigid staff carrying an expansible wedge section is forcibly inserted into the hollow core. A hydraulic cylinder located in the exposed end of the staff houses a piston which transmits force through the staff to a spreading cam contained in the wedge section so as to spread the wedge when pressure is introduced against the piston in the cylinder.

3,817,080

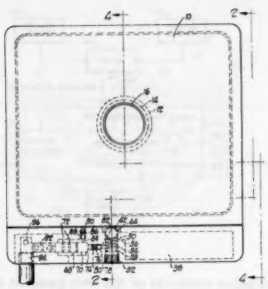
SAFETY-BOLSTER

Benjamin J. Zupan, Jr., and Leonard S. Zipp, Jr., both of 11090 Abbey Rd., both of North Royalton, Ohio 44133

Filed Apr. 7, 1971, Ser. No. 131,982
Int. Cl. B21d *55/00*
U.S. Cl. 72—432 **6 Claims**

An over-load control for a bolster plate to be positioned on the ram portion of a press, wherein, the device includes a cavi-

ty pressureized by a controlled fluid pressure for supporting the bolster plate with means to relieve the pressure upon over-



load, said pressurized system being self contained in the bolster plate.

3,817,081

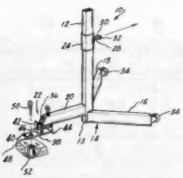
PULL POST WITH VARIABLE ANCHORING MEANS

Raymond Morski, Farmington, and Michael J. Podrecca, Ecorse, both of Mich., assignors to International Detroit Industries, Inc., Detroit, Mich.

Filed June 5, 1972, Ser. No. 259,394

Int. Cl. B21d *1/12*

U.S. Cl. 72—462 **6 Claims**



A portable pull post for pullers used in automotive body shops includes a slidable collar mounted on the upstanding post thereof and an elongated foot or base member having one end thereof adapted to accommodate a variety of anchoring means used to render the device stationary.

3,817,082

APPARATUS FOR ESTABLISHING FLOW OF FLUID MASS HAVING A KNOWN VELOCITY

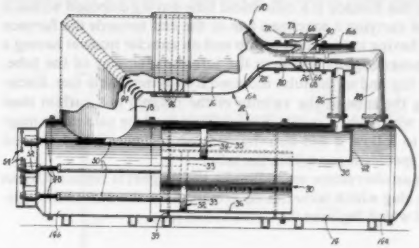
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Peter Price, 3346 Grayburn Rd., Pasadena 91107; Olgerts Veikins, 507 Santa Rosa Rd., Arcadia 91006; Edward R. Bate, Jr., P.O. Box 4313, Pasadena 91006, and Robert H. Jones, 1026 Terri Ann, West Covina 91791, all of Calif.

Filed Dec. 14, 1972, Ser. No. 315,048

Int. Cl. G01f *25/00*

U.S. Cl. 73—3 **6 Claims**

An apparatus for establishing a flow of fluid mass, such as a gas, having a known velocity, characterized by an hermetically sealed chamber conforming to a closed-loop configuration and including a throat and a plurality of axially displaceable pistons for sweeping through the throat a stream of gas including a core and an unsheared boundary layer. Within the throat there is provided a cylindrical coring body concentrically related to the throat for receiving the core, and a chamber surrounding the cylindrical body for drawing off the boundary



layer, whereby the velocity of the core is liberated from the effects of the velocity of the boundary layer.

3,817,083

DEVICE AND PROCESS FOR MEASURING A CHARACTERISTIC VALUE OF THE OPERATION OF A CLOCKWORK

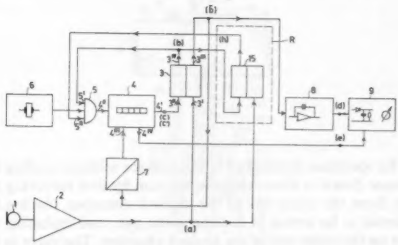
Erich Jucker, La Chaux De Fonds, Switzerland, assignor to Portescap, La Chaux de Fonds, Switzerland

Filed Sept. 26, 1972, Ser. No. 292,413

Claims priority, application Switzerland, Sept. 27, 1971, 14060/71

Int. Cl. G04b *17/00*

U.S. Cl. 73—6 **13 Claims**



A vibration detector connected to a clockwork supplies measuring pulses through an electronic logic circuit to a counter. A chronometering pulse generator is also connected through the logic circuit to the counter. A given number of chronometering pulses of constant repetition rate are counted from a predetermined measurement pulse and the duration of the period of time between the last chronometering pulse counted and the following measurement pulse is converted into an electrical value which is graphically posted.

3,817,084

APPARATUS FOR INSERTING AND REMOVING SPECIMENS FROM HIGH TEMPERATURE VACUUM FURNACES

Charles W. Whitehead, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 17, 1972, Ser. No. 307,729

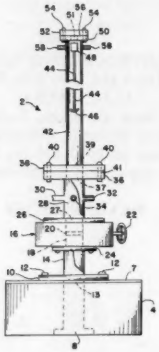
Int. Cl. G01n *25/00*

U.S. Cl. 73—15 R **12 Claims**

A high temperature vacuum furnace having secured to the port thereof apparatus for the insertion of specimens to be tested and removal thereof from the test zone of the furnace. The apparatus comprises a high speed gate valve for isolating the interior of the furnace from an air lock chamber on the opposite side of the gate valve. The air lock chamber is provided

with valve ports connected to a vacuum source, a source of inert quenching gas, and the atmosphere, respectively Removeably attached to the end of the air lock chamber away from the furnace is a cylindrical tube having disposed within it a rod carrying a specimen pan at the end towards the furnace and having mounted at its top end an annular magnet having a diameter slightly less than the interior diameter of the tube. The top end of the tube is closed by a removeable cap. Encircling the tube in the vicinity of the magnet is a carbon steel ring which when axially moved along the tube causes the magnet to follow it and thereby controls the position of the rod and specimen pan within the tube.

In an alternative embodiment, the magnet is replaced by an iron slug which serves as an armature for the coil of the solenoid which replaces the carbon steel ring.



The specimen is inserted in the furnace without cooling the furnace down or disturbing the vacuum by first removing the tube from the outer end of the air lock chamber, placing the material to be tested in the specimen pan, and replacing the tube on the outer end of the air lock chamber. The valve in the port connected to the source of the vacuum is then opened to bring the pressure in the air lock chamber to that of the furnace. The gate valve is then opened and the ring moved along the tube towards the furnace thereby moving the rod and specimen pan until the specimen pan is within the test zone of the furnace. After the completion of the test, the specimen pan is moved to the air lock chamber, the gate valve closed, the specimen cooled, and the chamber brought to atmospheric pressure. Optionally, the specimen may be quenched with inert gas.

3,817,085

APPARATUS FOR COMPOSITION MEASUREMENT AND CONTROL OF BINARY GAS MIXTURES

Royston A. Stubbs, King City, Ontario, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence

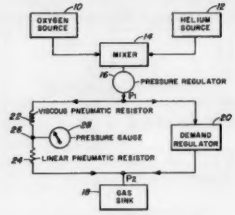
Filed Jan. 11, 1972, Ser. No. 216,958

Claims priority, application Canada, Jan. 11, 1971, 102406

Int. Cl. A62b *7/02*

U.S. Cl. 73—23 **10 Claims**

For regulation or measurement of the composition of binary gas mixtures, the invention provides the series combination of a viscous pneumatic resistor (e.g., an elongated capillary tube) and a linear pneumatic resistor (e.g., a porous membrane), connected between a binary gas source and a gas sink, and having a measuring or regulating element responsive to pressure at the junction between the two resistors. Junction pressure varies as a function of the molecular weight of the gas, and thus if two gases of dissimilar molecular weights are mixed, a reading of junction pressure can be used to determine the relative amounts of the two gases in the mixture, or the pressure can be used directly in apparatus for regulating the composition of the mixture.



3,817,086

METHOD AND DEVICE FOR DETECTING AND LOCATING LEAKS IN BURIED PIPELINES

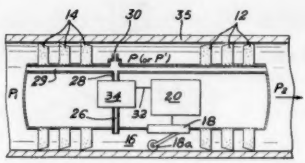
Gerard Dorgebray, La Chaussee D'Ivry, France, assignor to Elf-Union S.A., Paris, France

Filed Jan. 17, 1972, Ser. No. 218,059

Claims priority, application France, Jan. 19, 1971, 71.01604

Int. Cl. G01m *3/28*

U.S. Cl. 73—40.5 R **9 Claims**



A detection scraper piston which is moved with the flow of liquid transported by a pipeline is fitted with end cups defining an intermediate compartment within the pipeline bore, with an odometer for measuring the distance of travel and pressure-sensing and measuring means.

The method of leak detection consists in continuously measuring the displacement of the piston from a predetermined zero point as well as the difference between the pressure within the compartment and an intermediate pressure between those prevailing on the upstream and downstream sides of the piston.

3,817,087

APPARATUS FOR DETECTING AND INDICATING LEAKS IN A FLUID SYSTEM

Joseph R. Mooney, 40 Killdeer St., New Orleans, La. 70124

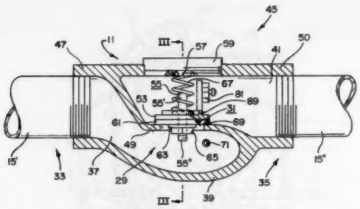
Filed Oct. 6, 1972, Ser. No. 295,609

Int. Cl. G01m *3/04*; **F17d** *3/04*

U.S. Cl. 73—40.5 R **11 Claims**

Apparatus for detecting and indicating leaks in a fluid system having a fluid line, an outlet valve on the fluid line, and a pump connected to the fluid line for causing fluid to flow therethrough. The apparatus includes a bypass passageway which is adapted to bypass fluid around a check valve disposed in the fluid line. The apparatus utilizes a time delay

interval between the starting of the pump and the opening of the outlet valve to determine if there is a leak. In one form of the apparatus, a blocking element is actuated by flow through the bypass passageway and swings out over the top of the



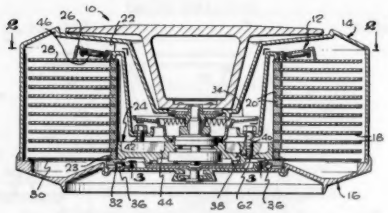
check valve to limit movement thereof so that when the outlet valve is subsequently opened, flow will be reduced therethrough, indicating that there is a leak. In another form, the flow through the bypass passageway during said time delay interval is indicated by a visual or other type indicator.

3,817,088

MAGNETIC MEMORY DISC PACK BALANCING SYSTEM

Paul G. Herbig, San Jose, Calif., assignor to Caelus Memories, Inc., San Jose, Calif.

Filed Aug. 23, 1972, Ser. No. 283,049
Int. Cl. G01m *1/16, 1/32*
U.S. Cl. 73—66 **3 Claims**



A method for constructing and balancing magnetic memory disc packs, including forming several threaded holes completely through a thick hub member, assembling a stack of magnetic memory discs on the hub member, retaining the disc to the hub member by attaching a clamp thereto using short screws that project only partially through the hub member so that the other ends of the threaded holes are empty, and dynamically balancing the assembled disc pack by installing one or more screws in the ends of the holes opposite the clamp.

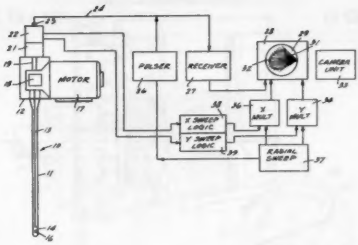
3,817,089

ROTATING PROBE HIGH DATA ACQUISTION RATE APPARATUS

Reginald C. Eggleton, and Albert W. Weidner, both of Champaign, Ill., assignors to Interscience Research Institute, Champaign, Ill.

Division of Ser. No. 158,154, June 30, 1971. This application Oct. 19, 1972, Ser. No. 299,042
Int. Cl. A61b *5/04*
U.S. Cl. 73—67.8 S **2 Claims**

An instrument and method which allows real time examination of internal organs of the body such as the heart comprising a catheter which has a rotating tip in which a number of ultrasonic transducers are mounted and which can be selectively connected to a pulser to transmit a ultrasonic pulse into the



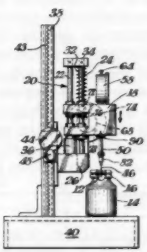
body and receive an echo from such pulse and including commutating, indexing and presentation means such that display of the conditions within the body may be obtained.

3,817,090

CORING TESTER FOR ELASTOMER

Frank Michel, Brooklyn, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 31, 1973, Ser. No. 328,478
Int. Cl. G01n *19/00*
U.S. Cl. 73—81 **18 Claims**



A reciprocating carriage is adjustably mounted on a support column above a base on which a rubber stoppered bottle is disposed. The carriage reciprocates on slide rods mounted on an indexing bracket adjustably connected to the support column by a rack and pinion. A compression spring urges the carriage down the slide rods to advance the cannula into the rubber seal. An offset eccentric cam and follower reacts between the bracket and the carriage to retract and latch it against the force-applying spring. The cannula support rod is connected through a piston in a cylindrical hole in the carriage into engagement with a force gauge, which indicate the force on the cannula as it pierces the rubber stopper. The support rod is apertured to permit cores of rubber lodged in the cannula to be dislodged by an inserted wire for collection to determine the coring tendency of the rubber and needles in conjunction with the piercing force.

3,817,091

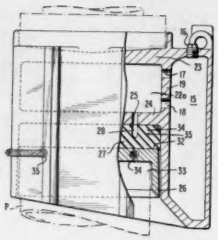
PILE DRIVER DRIVE CAP

Leonard L. Frederick, 15 Crestview Ter., Whippany, N.J. 07981

Filed May 11, 1971, Ser. No. 142,174
Int. Cl. G01n *33/24*
U.S. Cl. 73—84 **17 Claims**

A water-cooled drive cap for use with pile driving machines which also includes a sensing construction actuatable either

electrically or pneumatically to provide an indication of the force of the blow of the hammer of the pile driver and thereby prevent overdriving of the pile and to determine the static load bearing capacity of the pile.



3,817,092

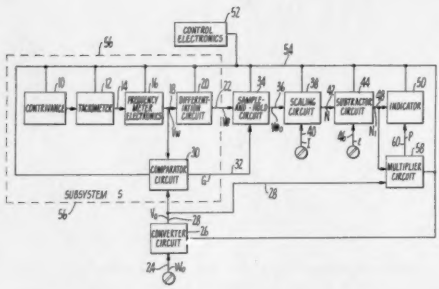
METHOD OF MEASURING TORQUE

Karl Ludloff, Los Angeles, Calif., assignor to Rotodyne, Inc., Berkeley, Calif.

Filed Apr. 7, 1971, Ser. No. 132,007

Int. Cl. G01l 3/24; G01m 15/00

U.S. Cl. 73—133 R **8 Claims**



The method for measuring torque described is based upon the fact that angular velocity ω and angular acceleration α are independent dynamical variables at any given time. Thus, for any given ω, a simultaneous determination of α and ω can be utilized for a determination of power. The method of measurement requires a negligible perturbation of the rotating system. It is easily susceptible to modification over a wide range of variations.

3,817,093

SEAT BELT WEBBING TENSION MEASURING DEVICE

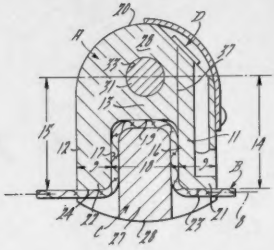
Charles E. Williams, Westland, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 5, 1972, Ser. No. 295,376

Int. Cl. G01l 5/10

U.S. Cl. 73—144 **11 Claims**

A transducer for measuring seat belt loads comprising a yoke having a pair of spaced arms commonly connected at a crotch portion: a fence element adapted to nest within and between the arms of the yoke for guiding the seat belt against the interior surfaces of the arms and crotch of said yoke. The yoke is floatingly restrained against one side of the seat belt and tension loads applied to the belt are effective in applying force at the outer extremites of the yoke arms so as to move them apart applying compression at a central region of the yoke. Strain gauges are embedded within the central region of the yoke to sense compression as well as "poisson" tension; means are provided for converting the strain gauge signal to an indication proportional to the amount of load on said seat belt.



3,817,094

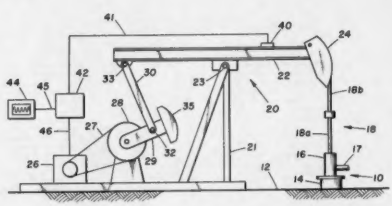
WELL MONITORING APPARATUS

Richard C. Montgomery, and Jacque R. Stoltz, both of Midland, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 27, 1970, Ser. No. 58,439

Int. Cl. E21b 47/00

U.S. Cl. 73—151 **13 Claims**



Method and apparatus for monitoring the operation of a well which is produced by a beam pumping unit. A load transducer is secured to the surface support structure of the beam pumping unit such that it generates a signal representative of load changes in the support structure as the walking beam is reciprocated. The transducer may take the form of an elongated bar which is secured to the support structure by longitudinally spaced rigid connections. The transducer bar as disclosed is mounted on the top of the walking beam.

3,817,095

DEVICE FOR DETECTING AND CORRECTING DEFECTS IN THE FLATNESS OF A PRODUCT IN STRIP FORM

Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France

Continuation of Ser. No. 175,447, Aug. 27, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 398,076

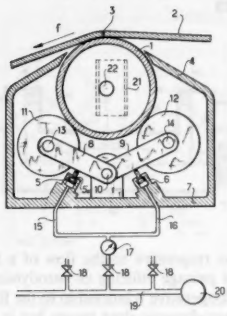
Claims priority, application France, Aug. 27, 1970, 70.31357

Int. Cl. B21d 7/04

U.S. Cl. 73—159 **9 Claims**

Device for detecting and correcting defects in the evenness of a product in the form of a strip during treatment, compris-

ing a roller arranged transversally to the travelling direction of the strip and divided into sections capable of movement with respect to one another and position indicators of the various



sections being placed outside the rollers, these indicators being formed by hydraulic cylinders, which may be isolated from their supply circuit.

3,817,096

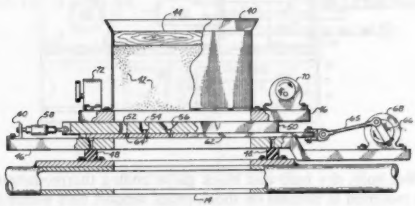
BALLISTIC RANGE DUST EROSION APPARATUS

Irving B. Osofsky, Palos Verdes Peninsula, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Apr. 24, 1972, Ser. No. 246,546

Int. Cl. G01n *3/56*

U.S. Cl. 73—167 **8 Claims**



Ballistic range dust erosion testing apparatus wherein a saboted test specimen is fired through a calibrated test environment and then captured intact in a deceleration tube for the extraction of dust erosion data. A dust dispenser consists of a vertical hopper with a sliding, reciprocating gate valve having a stationary plate and a sliding plate with coincident holes aligned for metered dust dispersion during reciprocal movement of the sliding plate. Adjustment of moving plate stroke length and frequency (RPM) in combination with phase adjustment with the stationary plate provides a desired dust orientation in space through which the test specimen passes. Controllable vibration in three orthogonal planes applied to the dispenser sweeps the dust grid in space so that the entire area of the target is subjected to a uniform dust impingement, even in a vacuum. Data is obtained by microscopic examination as well as by weighing the eroded specimen.

3,817,097

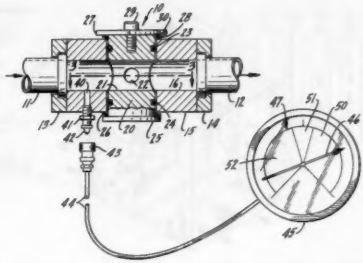
METHOD AND APPARATUS FOR TESTING HYDRAULIC PUMPS

Thomas M. Heroux, 485 Forest Ave., Glen Ellyn, Ill.

Filed June 5, 1972, Ser. No. 259,397

Int. Cl. G01m *19/00*

U.S. Cl. 73—168 **11 Claims**



A method and apparatus for testing hydraulic pumps in the field. A valve is connected permanently in the hydraulic line, with a movable valve member having a large orifice normally aligned with the hydraulic line to permit unrestricted flow of hydraulic fluid through the valve. The valve body forms a test opening leading from the fluid passageway within the valve to the exterior surface thereof, where the opening is closed by a quick coupler. When the pump is to be tested, the coupler is opened by fitting a mating sleeve thereover, a pressure gage is connected to the test opening, the movable valve member is moved to align a small orifice with the hydraulic line to restrict the flow of hydraulic fluid through the line, and the resulting pressure reading on the gage is used to determine whether the pump is operating satisfactorily. The dial of the gage is calibrated to indicate a "go" or "no go" condition of the pump, and may also be provided with numerical indicia to indicate the pressure in numerical units such psi.

3,817,098

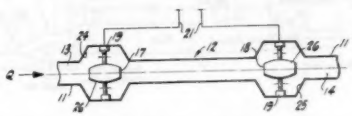
AXIAL FLUID FLOW AND SOUND SPEED

Alvin E. Brown, Redwood, Calif., assignor to Saratoga Systems, Inc., Cupertino, Calif.

Filed Aug. 9, 1972, Ser. No. 278,987

Int. Cl. G01p *5/00*; **G01h** *3/00*

U.S. Cl. 73—194 A **7 Claims**

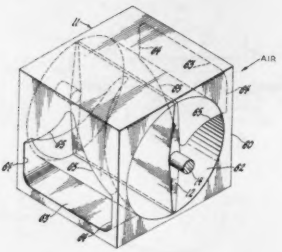


An apparatus and method for obtaining flow and sound speed data using ultrasonic energy transducers in communication with a fluid conducted through a conveyance. Appropriate electronic circuitry is included to generate energy for transmission through the fluid and to receive and reduce the transmitted energy to provide sound speed and average flow velocity. Average flow velocity is available directly without knowledge of flow profile by sampling a sufficient length of flow to remove dominance by single turbulence patterns and by filling the conveyance with the ultrasonic wave front thereby sampling all elements of the flow. Stable measurement is obtained in the flow transition zone and for conveyances with small internal dimensions.

3,817,099
MASS FLOW AIR METER

William C. Bubniak, Troy; Louis W. Huellmantel, Warren, and Harry R. Mitchell, Bloomfield Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1972, Ser. No. 278,958
Int. Cl. G01f 9/00
U.S. Cl. 73—199 1 Claim

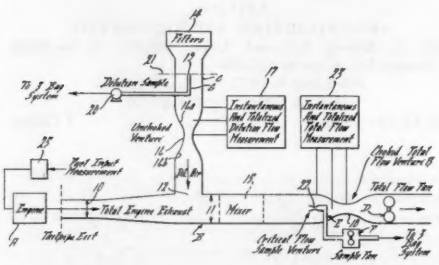


A mass flow air meter for use in a mass air flow type electronic fuel injection system for an engine to measure mass air flow through an air induction system including a scheduled area valve consisting of a butterfly valve cooperating with scheduled valve throat area openings whereby the pressure drop in the induction passage through this valve is held approximately constant during changes in fluid flow by allowing the valve throat area openings to vary.

3,817,100
CRITICAL FLOW VENTURI

Richard D. Anderson, Southgate; Nicolas A. Azelborn, Ypsilanti, and Wallace R. Wade, Farmington, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1972, Ser. No. 303,584
Int. Cl. G01f 1/00
U.S. Cl. 73—213 8 Claims

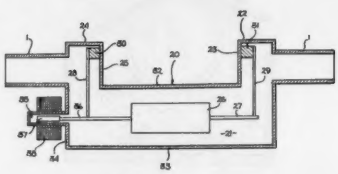


An apparatus for determining the total mass of exhaust gas constituents emitted from an internal or external combustion engine, the apparatus having a through-flow duct to receive the exhaust gases and into which is introduced dilution air for thorough mixing with the exhaust gases. The apparatus has means for measuring not only the total mixed flow but also the total flow of dilution air introduced to the duct. Unique means is utilized for extracting and measuring a proportional sample of said mixed flow. Collection and measuring apparatus is used to determine the concentration of dilution air constituents as well as the combined concentration of gaseous constituents in the mixed flow. Utilizing the above two flow measurements and the two constituent concentration measurements, the total mass of exhaust gas from the engine is simply determined on a theoretically correct basis.

3,817,101
FLOW METER

Tasaku Takanoyama, and Yasuo Mori, both of Tokyo, Japan, assignors to Tokyo Keiso Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 165,679, July 23, 1971, abandoned. This application Jan. 8, 1973, Ser. No. 321,698
Int. Cl. G01f 1/100
U.S. Cl. 73—228 5 Claims

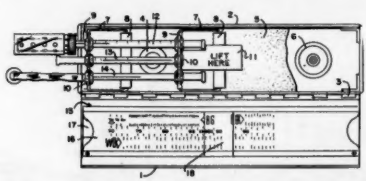


An apparatus responsive to the flow of a fluid through a positioned flow passage utilizing an aerodynamic drag means positioned in cooperative relationship to the flow through the passage. The aerodynamic drag means has in operative relation thereto means for transmitting a signal corresponding to the positional deviation resulting from the flow of the fluid through the passage.

3,817,102
COMBINED TEMPERATURE-HUMIDITY INDEX COMPUTATION KIT

Gerald A. Shea, Middletown, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1972, Ser. No. 300,932
Int. Cl. G01w 1/06
U.S. Cl. 73—338 11 Claims



Wet bulb, dry bulb and black globe analog thermometers are mounted in parallel on shock-proof support bars within a hinged-top box. The support bars are themselves mounted on hinges so that the thermometer assembly can be partially rotated out of the box to a position above the top of the box. The handle used to rotate the assembly out of the box also serves to shield the dry bulb thermometer from incident radiant energy. A special purpose slide rule is attached to the inside top of the box for the purpose of computing a combined temperature-humidity index based on readings taken from the three thermometers.

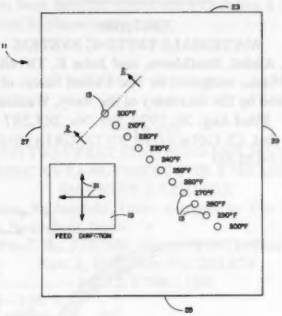
3,817,103
COPIER TEST SHEET

Arthur S. Diamond, and Charles J. Usedom, both of Palos Verdes Peninsula, Calif., assignors to Diamond Research Corporation, Rolling Hills Estates, Calif.

Filed Feb. 4, 1970, Ser. No. 8,638
Int. Cl. G01k 11/12
U.S. Cl. 73—356 1 Claim

A copier test sheet and method for determining the copy sheet temperature of document copying machines, which

comprises a sheet of paper to be fed through the copier, the sheet having a plurality of separate and distinct patches or coating of temperature-sensitive material thereon, each patch or area being sensitized to a distinct and different temperature level, covering increments across a temperature operating



range which copy sheets will be subjected to in a copier, such that when the sheet is fed through the copier there will be a change in the color or physical condition of those patches or areas whose sensitivity lies either at or below the actual temperature that the paper encountered.

3,817,104

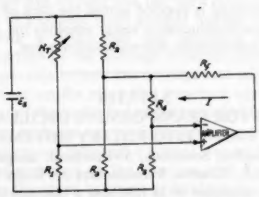
TEMPERATURE MEASURING VOLTAGE TO CURRENT CONVERTER

Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 94,277, Dec. 2, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 230,617

Int. Cl. G01k *7/24*

U.S. Cl. 73—362 AR **10 Claims**



A temperature measuring voltage to current converter including a temperature-responsive resistance bridge with an output connected to the input of an amplifier having an output connected to the resistance bridge wherein the resultant change of the output current of the amplifier is directly proportional to any change of its input voltage and independent of its load resistance so long as the amplifier is operating within its capabilities. The converter may be used in a wide variety of applications not limited to temperature indication. The bridge is used both in temperature indication and temperature controlling. The circuit of the converter needs little power and current. The use of a unique circuit construction makes it possible to produce a meter range of the precise magnitude desired. The use of the same unique circuit construction makes possible high sensitivity and the determination and adjustment of the point at which most accuracy and linearity exists. Meter overvoltage protection is also provided.

3,817,105

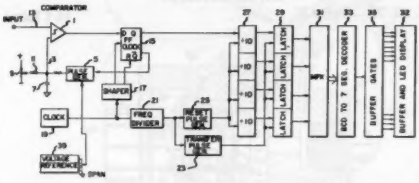
PORTABLE DIGITAL TEMPERATURE METER

Gabriel J. Luhowy, Lima, N.Y., assignor to Transmation, Inc., Rochester, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,838

Int. Cl. G01k *7/00*

U.S. Cl. 73—362 AR **11 Claims**



The disclosure relates to a portable digital temperature meter of small size and long term stability capable of accurate temperature measurement in the fever thermometer range with long term battery life capability.

3,817,106

ELECTRICAL MEASURING DEVICE

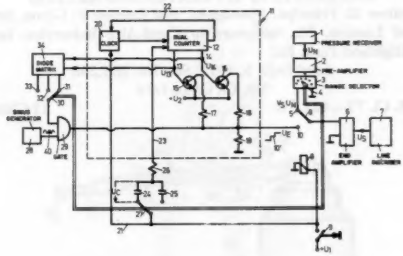
Peter Hobel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 79,524, Oct. 9, 1970, abandoned. This application Apr. 20, 1972, Ser. No. 246,087

Claims priority, application Germany, Nov. 4, 1969, 1958906

Int. Cl. G01l *19/08*

U.S. Cl. 73—391 **13 Claims**



An electrical measuring device, specifically an electrical manometer for direct blood pressure measurements is provided with a writing device for inscribing the effective signal and a device connected in advance of the writing device for changing the measuring range. The measuring device also includes a calibrating impulse generator as well as switching means, such as a calibration key, for interrupting the feed of the effective signal and for blending the calibrating impulses produced by the calibrating impulse generator as calibrating markings in the inscription of the effective signal. The invention is particularly characterized by the provision of marking generators operated by the range changing device and producing range markings corresponding to the individual measuring ranges. The invention is also characterized by the feature that the range markings are blended with calibration unit markings which are independent from the set measuring range.

3,817,107
SEMICONDUCTOR PRESSURE TRANSDUCER

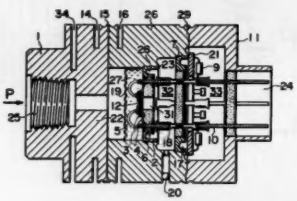
Satoshi Shimada; Taisaki Kozuma, both of Hitachi, and Ichiro Kimura, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 29, 1972, Ser. No. 293,508

Claims priority, application Japan, Sept. 29, 1971, 46-76346

Int. Cl. G01l *9/04*

U.S. Cl. 73—398 AR **16 Claims**



In a semiconductor pressure transducer including an insulating support member having a perforation at its center and provided with terminal pins hermetically mounted therein for connection to an external circuit and a silicon diaphragm having strain gages provided in the surface thereof and so attached to the insulating support member as to seal the perforation of the member, the terminal pins and the silicon diaphragm are integrally formed with the insulating support member to facilitate a wiring operation in the manufacturing process, the strain gages are located on the pressure receiving side, the terminals of the strain gages with which lead wires are connected and the tops of said terminal pins are arranged substantially at the same level above the support member, and thereafter the terminals are connected through lead wires with the tops of the pins.

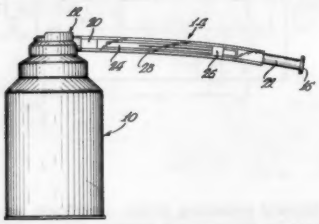
3,817,108
GAS SAMPLING APPARATUS AND METHOD

Andrew H. Principe, Mundelein, and Emmett P. Glynn, both of Lemont, Ill., assignors to Cand-Aire Industries, Inc., Highland Park, Ill.

Filed Sept. 5, 1972, Ser. No. 286,268

Int. Cl. G01n *1/24*

U.S. Cl. 73—421.5 R **11 Claims**



Apparatus for taking and storing gaseous samples for subsequent analysis, such as alveolar air of humans for quantitative analysis for suspect constituents of the breath, for example breath alcohol. A partially evacuated canister has a valved inlet connected to a tube through which the gas sample is taken. The tube is composed of a flexible material and has a longitudinal slit therein forming a one way valve, which opens under internal pressure and closes when vacuum is applied from the canister through the tube. The canister has a depressed area in the top around the valve, said area containing a self-sealing composition, which permits puncture of the container and hypodermic extraction of a sample without tampering or contamination.

A particular feature resides in the injection of a standard or tracer within the canister whereby an extracted specimen of the sampled gas may be compared simultaneously on a gas chromatograph or other suitable instrument with the known standard to provide immediate quantitation of the proportion of suspect constituent in the sample.

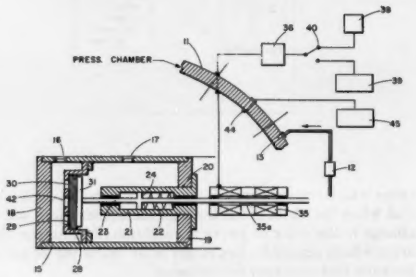
3,817,109
MATERIALS TESTING SYSTEM

Norman F. Audet, Southboro, and John E. Tirrell, Jr., Millis, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1972, Ser. No. 285,387

Int. Cl. G01n *33/36, 25/18;* **G01b** *5/06*

U.S. Cl. 73—432 SD **1 Claim**



A hyperbaric simulator is provided for evaluating thickness change, stretch-flex change, thermal conductance and other material properties under simulated deep sea pressures down to 1,000 feet. Gas control and instrumentation hardware, testers and pressure chamber equipment necessary for studying the above material properties are incorporated into an integrated facility. The thickness tester includes a low-force spring-actuated piston which maintains contact with the sample surface as it undergoes thickness changes, the stretch-flex tester monitors the center deflection of a sample when a small pressure differential is applied across the face of the sample, and the thermal conductance tester employs the guarded hot plate system to determine thermal conductance.

3,817,110
DEVICE FOR TRANSFORMING OSCILLATING MOVEMENT INTO ROTARY MOVEMENT

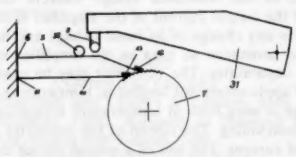
Claude Challandes, Sonceboz, Switzerland, assignor to Montres Rolex S.A., Geneva; Manufacture des Rolex S.A., Bienne and Societe anonyme de la fabrique d'horlogerie Le Coultre & Cie, Le Sentier, all of, Switzerland

Filed Nov. 14, 1972, Ser. No. 306,405

Claims priority, application Switzerland, Nov. 15, 1971, 16551/71

Int. Cl. F16h *27/02*

U.S. Cl. 74—142 **4 Claims**



A device for transforming oscillating movement into rotary movement includes a flexible blade fixed at one end and carrying a pawl in driving engagement with a ratchet wheel at its

other free end. Between its ends, the blade has a bent or curved portion and a bearing piece acts on the blade between its bent portion and its fixed end. This bearing piece transforms the oscillating movement of a driving member into an unilateral pressure on the blade, which flexes the blade and causes the pawl to drive the ratchet wheel. To prevent reversal of the ratchet wheel, a retaining pawl can be provided; alternatively two bent flexible blades each carrying a driving pawl may be driven in phase opposition.

3,817,111

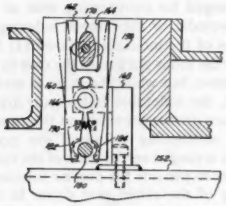
LOCK AND TRAVERSE FINE FEED MECHANISM AND BEARING ARRANGEMENT FOR A MEASURING MACHINE CARRIAGE

Paul E. Allen, Springfield, Ohio, assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 119,700, March 1, 1971. This application Nov. 2, 1972, Ser. No. 303,674

Int. Cl. F16h *51/00*

U.S. Cl. 74—156 **3 Claims**



A measuring machine having a simplified manually operated carriage locking and fine feed traversing mechanism comprised of a double lever gripper linkage mounted on the carriage with a brake bar and threaded adjustment rod rotatably carried by the carriage mounting structure and successively operable to lock the carriage and adjust the position of the carriage on the mounting structure against a frictional engagement of the brake bar and gripper linkage. The bearing arrangement includes a pair of spool bearings mounted on the Y-axis carriage and riding on an upper way with a lower spherical bearing mounted on the carriage with its axis extending normally to the spool bearings and riding on a lower way adjustably secured to the carriage mounting structure, so that the extent of probe overhang and the way machining costs may be minimized.

3,817,112

VARIABLE RATIO FRICTION DRIVE SPEED CHANGERS

James Frederick Ramsay, R.R. No. 1, Caledon East, Ontario, Canada

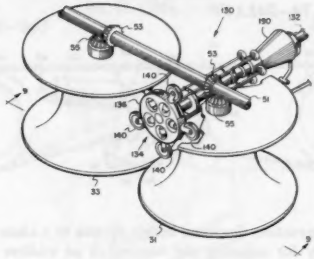
Filed Dec. 1, 1972, Ser. No. 311,117

Int. Cl. F16h *15/38, 17/04*

U.S. Cl. 74—201 **14 Claims**

A variable ratio friction drive speed changer has a driving head mounted on the input shaft with a number of friction wheels mounted on the periphery thereof to make inclined driving contact against arcuate driven surfaces of a pair of adjoining output spools.

In one arrangement the friction wheels are mounted to castor in load-sensing relation with the output spools, while in



a further embodiment there is provided a selective control having a capability to operate the speed changer in reverse gear.

3,817,113

CHAIN DRIVE WITH IDLER WHEEL TENSIONING MEANS BIASED BY ELONGATED PADS

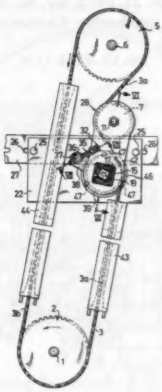
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Jan. 5, 1972, Ser. No. 215,590

Claims priority, application Switzerland, Feb. 5, 1971, 724/71

Int. Cl. F16h *7/12*

U.S. Cl. 74—242.1 R **9 Claims**

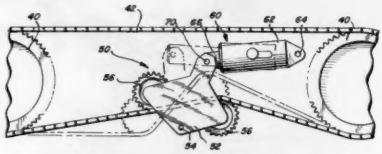


The chain drive has one run deflected and biased about a tensioning wheel which is mounted on a pivotal support. The support is, in turn, mounted on a pivot axis by means of an elongated tension spring element made up of a pair of concentric tubes and a resilient material between the tubes. The resilient material allows deflection of the support when an abrupt tension force is imparted to the chain as in the case upon braking.

3,817,114
CHAIN TIGHTENER FOR ENDLESS CHAIN

Maurice Klee, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 29, 1973, Ser. No. 327,741
Int. Cl. F16h 7/12
U.S. Cl. 74—242.1 FP 10 Claims



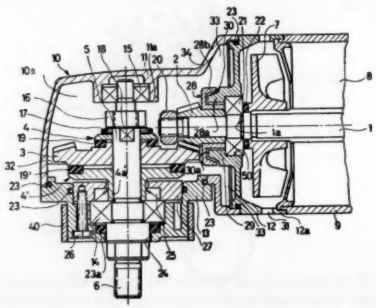
The invention disclosed herein relates to a chain tightener assembly for adjusting the tension of an endless chain entrained over a pair of spaced sprockets. The chain tightener consists of a carrier rotatably supporting a pair of idler sprockets respectively engaging opposite surfaces of the chain.

The carrier is moved by a fluid ram consisting of a cylinder supported on a fixed pivot axis and a piston secured to the carrier. The cylinder has a relief valve communicating with an internal chamber and a fitting to allow fluid, such as grease, to be pumped into the chamber. The relief setting of the relief valve means defines the tension of the chain produced by the fluid and a plug normally seals the relief valve means to prevent actuation during operation of the vehicle. The fluid ram also has indicating means for indicating a worn condition for the chain.

3,817,115
TRANSMISSION FOR ELECTRIC SANDERS OR THE LIKE

Albrecht Schnizler, and Herman Kieser, both of Nuertingen, Germany, assignors to Metabowerke KG, Closs, Rauch & Schnizler, Nuertingen/Wuerttemberg, Germany

Filed Nov. 22, 1972, Ser. No. 308,791
Claims priority, application Germany, Nov. 26, 1971, 2158598
Int. Cl. F16h 1/14
U.S. Cl. 74—417 23 Claims

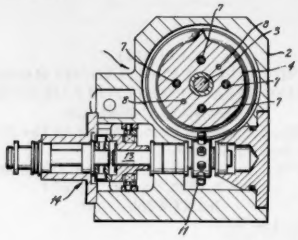


An electrically powered portable angle sander wherein a portion of the interior of the transmission housing is filled with oil and the housing has an aerating opening which is located above the surface of oil in all angular positions of the housing. The aerating opening communicates with the interior of the housing by way of a labyrinth seal which surrounds the input shaft or the output shaft of the transmission. The aerating opening prevents the pressure of oil from rising at elevated temperatures to thus reduce the likelihood of leakage of oil between the sections of the housing and/or along that shaft which is not surrounded by the labyrinth seal.

3,817,116
FOLLOWER POSITIONING AND INDEXING CAM FOR ROLLER GEAR DRIVE AND METHOD OF USE

Stephen K. Georgieff, Des Peres, Mo., assignor to UMC Industries, Inc., St. Louis, Mo.

Filed Sept. 25, 1972, Ser. No. 292,078
Int. Cl. F16h 1/16, 55/06
U.S. Cl. 74—426 7 Claims

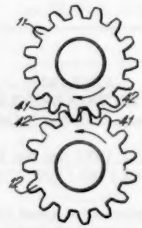


In a roller gear drive, a plurality of followers mounted upon its hub are arranged for cooperating with an indexing cam providing for periodic or continuous indexing of the drive, with at least one of the indexable follower(s) being disposed for actuation by the index portion of the cam to provide for indexing of the drive, but while the drive is maintained in the period of dwell, the indexable follower(s) are idly disposed within a clearance groove provided on the cam while the just preceding and succeeding followers are positioned upon beveled surfaces arranged on the sides of the cam opposite the clearance groove to provide for precise tolerance positioning and functioning of the roller gear drive. In the process of utilizing the aforesaid drive, the indexable follower(s) may provide for indexing of the roller gear drive as it encounters the index portion of the cam, but as the drive enters a period of dwell, or approximating dwell, said indexing follower(s) enters into an idle position within the clearance groove of the cam while the just preceding and succeeding followers encounter the beveled surfaces to provide for precise positioning, greater accuracy, and structural stability in the operation of the roller gear drive when within the range of this near dwell function.

3,817,117
GEAR PUMP OR MOTOR

Yasuo Kita, and Jiro Hida, both of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Aug. 25, 1972, Ser. No. 283,823
Claims priority, application Japan, Aug. 28, 1971, 46-66123
Int. Cl. F16h 55/06
U.S. Cl. 74—462 8 Claims



In a gear pump or motor, the tooth profile of the intermeshing gears is involutely formed at least on a torque transmitting

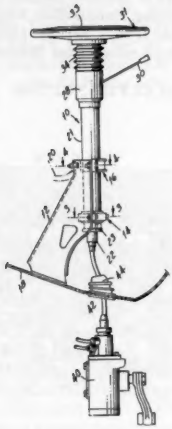
side. The tooth profile of the intermeshing gears on a non-torque transmitting side is made steeper than an imaginary tooth profile which is symmetrical with that on the torque transmitting side.

3,817,118

ENERGY ABSORBING STEERING WHEEL SUPPORT

Ernest W. Kitzner, Allen Park; Alex Rhodes, West Bloomfield Twp., and Earl W. Wolfe, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1972, Ser. No. 311,981
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 9 Claims



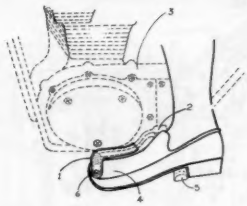
An energy absorbing steering column according to an embodiment of this invention includes an outer column tube with a telescopic steering shaft rotatably supported therein. A deforming assembly and a releasable assembly connect the column to vehicle support structure. The deforming assembly has projections that engage grooves in the surface of the forward end of the column tube. The projections are spaced from the rearward ends of the grooves by a predetermined distance and are constructed to plow extensions of the grooves after the column has been axially displaced the predetermined distance. A convoluted energy absorbing can is interposed between the end of the steering column tube and the hub of a padded steering wheel. When a forwardly directed major impact load is imposed upon the steering wheel, the force directed to the various components of the steering column assembly will cause a series of consecutive functions to be performed or events to occur as follows: (1) the energy absorbing padding on the steering wheel will deflect, (2) the steering shaft assembly will telescope, (3) the convoluted can will begin to deform, (4) the releasable support assembly will release its grip upon the steering column outer tube, (5) the inertia of the steering column will be overcome and the column will be accelerated forwardly up to a speed coinciding with the speed of the impacting object upon the steering wheel, and (6) the projections will traverse the length of the grooves, engage the ends of the grooves and plow extensions of the grooves whereby the plastic deformation of the surface of the column tube will absorb the major portion of kinetic energy associated with the impact.

3,817,119

PROTECTIVE COVER FOR MOTOR VEHICLE GEAR SHIFT ASSEMBLY LEVER

David Evarts Scott, and Rae Nell Scott, both of 1580 Skylark Way, Chula Vista, Calif. 92011

Filed Dec. 26, 1972, Ser. No. 318,607
Int. Cl. G05g *1/16*
U.S. Cl. 74—563 4 Claims



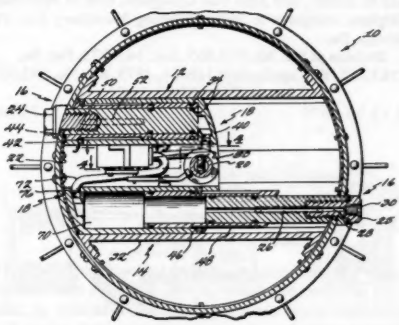
A protective cover is provided for foot-operated gear shift levers of motorbikes, motorcycles, motorscooters and like vehicles. The cover consists of a tubular sheath of soft, pliable resilient woven or knit material which is open at one end and tapered to complete closure at the other end. The upper surface of the tubular sheath is fitted with a reinforcing patch of heavier, non-porous material.

3,817,120

MEANS FOR RELATIVELY VARYING THE POSITION OF AN AXIS

Frank W. Clay, 1565 Kamole St., Honolulu, Hawaii 96821

Filed July 18, 1972, Ser. No. 272,806
Int. Cl. F16h *29/04*; B62m *1/00*
U.S. Cl. 74—571 L 6 Claims



A means for varying the distance between a revolving part of a rotating body and the axis of rotation of that body. The movement is provided by a pair of parallel reciprocating single-acting oppositely arranged hydraulic motors having opposite corresponding ends connected to the wheel with the other ends secured together and guided for linear movement relative to the wheel, in directions parallel to a diameter thereof. These other ends carry between them the wheel axle, movable along the aforesaid diameter, into a position coaxial and an infinite number of positions eccentric, relative to the wheel. The motors are hydraulically connected together for flow of fluid therebetween under control of a manually-controllable reversible check-valve.

3,817,121
SYNCHRONIZING INSTALLATION FOR CHANGE-SPEED TRANSMISSIONS

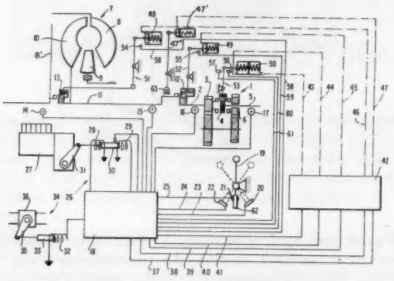
Alfred H. Muller-Berner, Waiblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Apr. 12, 1971, Ser. No. 133,175

Claims priority, application Germany, Apr. 10, 1970, 2017237

Int. Cl. F16h *47/08*; **G05g** *9/12*

U.S. Cl. 74—645 **27 Claims**



A synchronization installation for shiftable change-speed transmissions, especially for motor vehicles, in which an electronic synchronization control unit adjustable by means of a preselector is provided that is equipped with rotational speed-measuring devices for the transmission members to be shifted and with devices for increasing or decreasing the rotational speed of the transmission elements to be shifted, and which is connected with shifting clutches by way of shifting devices that are actuated in case of rotational speed equality.

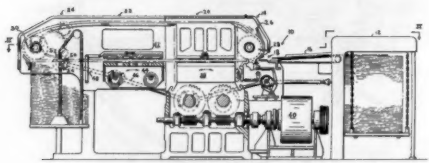
3,817,122
DIFFERENTIAL DRIVE MECHANISM

Franz N. Lenoir, and Jean Van Gyseghem, both of Marcinelle, Belgium, assignors to Miller Printing Machinery Co., Pittsburgh, Pa.

Division of Ser. No. 217,867, Jan. 14, 1972, Pat. No. 3,763,717. This application July 26, 1973, Ser. No. 382,959

Int. Cl. F16h *37/00, 35/02*

U.S. Cl. 74—679 **3 Claims**



Cutter and creaser apparatus that cuts and creases sheets and thereafter strips the cutout portions from the sheet includes a drive mechanism that is capable of either intermittently stopping the sheet for the cutting and creasing operations or varying the speed of the sheet as it is conveyed through the cutter and creaser apparatus. The drive mechanism includes a drive shaft driven at constant velocity by suitable drive means. A speed control shaft is mounted in parallel spaced relation to the main drive shaft and is connected thereto by a pair of meshing gears to that the speed control shaft rotates at the same angular velocity as the drive shaft. A sun gear of a planetary gear assembly is connected to the drive shaft for rotation therewith and meshes with a planet gear that, in turn, meshes with the internal toothed portion of the ring gear. The external toothed portion of the ring gear meshes with a drive gear for the press sheet conveyor shaft on which a pair of drive sprockets are mounted in spaced relation to each other. A lever is pivotally connected to the drive shaft intermediate its end portions and has one end portion connected to the planet gear. The other end portion has a cam follower mounted thereon that is maintained in abutting relation with the cam surface of a cam secured to and rotatable with the speed control shaft. The cam upon rotation pivots the lever and moves the planet gear. The angular velocity of displacement of the planet gear through the lever determines the relative velocity of the sheet conveyor. Another embodiment includes bevel gear arrangements to selectively decrease and increase the speed of the conveyor mechanism.

3,817,123
GEARING

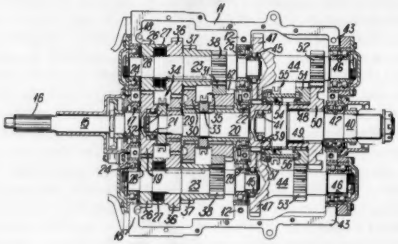
Eric Albert Whateley, Huddersfield, and Eric Alexander Pengilly, Newbury, both of England, assignors to David Brown Gear Industries Limited, Huddersfield, England

Filed June 1, 1971, Ser. No. 148,622

Claims priority, application Great Britain, June 5, 1970, 27434/70

Int. Cl. F16h *3/02, 3/08*

U.S. Cl. 74—745 **6 Claims**



Power transmission gearing has a driving shaft and a driven shaft interconnected by a plurality of layshafts, constituting parallel power paths. Each layshaft is provided with a torque limiting clutch to restrict the maximum torque transmissible by the shaft. Where, for example, two layshafts are provided, the capacity of each torque limiting clutch is rather more than half the maximum torque rating of the power transmission gearing.

3,817,124
GEAR TRAIN ARRANGEMENTS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company Limited, Yokohoma City, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,496

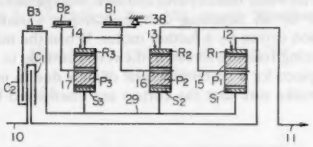
Claims priority, application Japan, May 16, 1969, 44-37417

Int. Cl. F16h *57/10*

U.S. Cl. 74—759 **2 Claims**

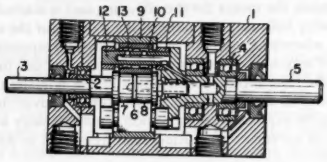
Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to

deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an auto-



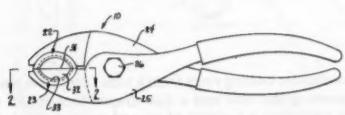
matic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,817,125
TORQUE TRANSMISSION DEVICE
Kenya Nakamura; Nobuo Fukuma, and Yoshito Kato, all of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed July 18, 1972, Ser. No. 272,727
Claims priority, application Japan, July 21, 1971, 46-53901
Int. Cl. F16h *13/06*
U.S. Cl. 74—798 **8 Claims**



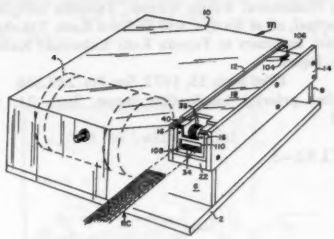
In an arrangement for transmitting rotating power between an input shaft and an output shaft by means of rolling friction, a plurality of cylindrical rollers are disposed around and in contact with the input shaft and are secured to the output shaft. An outer race is located radially outwardly of the rollers and is pressed radially inwardly into contact with the rollers so that the rollers are elastically deformed and a radial preload is effected on the outer race. The preload can be achieved by force-fitting the outer race into a casing or by inserting means between the casing and the outer race.

3,817,126
DECAPPER
Ralph F. Koebbeman, 4910 Kilburn Ave., Rockford, Ill. 61103
Filed July 17, 1972, Ser. No. 272,554
Int. Cl. B67b *7/00*
U.S. Cl. 81—3.44 **1 Claim**



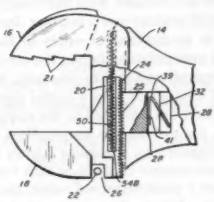
The decapper has opposed jaws mounted on pivotally connected arms. Each jaw has a flat stop face for engaging the top of the vial cap, and an arcuate gripping edge spaced from the stop face a distance equal to the distance from the top of the vial rim to the top of the cap. The jaw is relieved between the gripping edge and stop face. In one embodiment, a ramp is provided to wedge the cap upwardly as the jaws are moved toward each other.

3,817,127
MACHINE FOR SHEARING AND STRIPPING CABLE INSULATION
Richard Soeller, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Oct. 19, 1972, Ser. No. 299,311
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **14 Claims**



A machine for shearing and stripping cable insulation is provided with a movable block which has openings therethrough for receiving individual insulated conductors that have been slit and splayed at one end of a ribbon cable by slitting and splaying dies. Shearing and stripping members are mounted on the movable block and they are moved relative to the movable block via a slide assembly which moves linkage members pivotally connected to the shearing and stripping members along cam surfaces so that right angled movement of the shearing and stripping members is effected.

3,817,128
RAPIDLY ADJUSTABLE WRENCH
James P. Evans, 3233 S. 23rd, Oklahoma City, Okla. 73115
Filed Aug. 14, 1972, Ser. No. 280,523
Int. Cl. B25b *13/14*
U.S. Cl. 81—145 **7 Claims**



This invention describes an improved structure of a wrench with fixed and movable jaws in which the movable jaw is locked by means of ratchet teeth on its back edge which match ratchet teeth in a releasable locking member placed in a recess in the body of the wrench. A spring is provided to force the locking member into locking contact with the ratchet teeth on the movable jaw.

The improvement lies in the construction of this locking member which is made in two parts which are mirror images of each other. The two parts are inserted into the recess from opposite sides of the head of the wrench. On the end opposite to the ratchet teeth these two parts have slots cut which provide narrow matching ridges at the surfaces of the two parts where they come into contact. The spring that provides the force to place the locking member into contact with the ratchet teeth of the arm is a leaf spring formed in the shape of a number "7" with a slot cut in the portion comprising the top of the 7. This slot is of width to be slipped over the two ad-

jacent ridges which effectively locks the two parts together in a direction perpendicular to their plane of contact. Additionally shallow pin means may be provided to prevent relative motion of the two parts along the plane of contact.

3,817,129
NUMERICALLY CONTROLLED THREADCUTTING SYSTEM

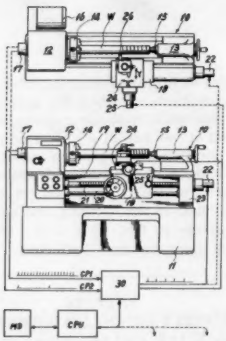
Hideo Nishimura; Kimjo Kanou; Tamotsu Ishigaki; Tetsuo Hosotani, all of Kariya, and Sadamu Kato, Takahama, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Sept. 15, 1972, Ser. No. 289,566

Claims priority, application Japan, Sept. 21, 1971, 46-73631

Int. Cl. B23b *1/00, 3/00*

U.S. Cl. 82—5 **5 Claims**



A numerically controlled threadcutting system includes a computer, a stepping motor which actuates a cutter along a workpiece, a position coder which generates a series of output pulse signals in accordance with the rotational speed of the workpiece, a shift register and a counter. Interpolated data for threadcutting is memorized in order in the memory of the computer. The interpolation data in the memory is transferred into the shift register one unit by one unit. A unit consists of a predetermined number of binary coded signals. The contents of the shift register are provided to the stepping motor one bit by one bit for controlling the longitudinal movement of the cutter when triggered by the pulse signals from the position coder. When the number of shifts or shift times counter by the counter reaches a predetermined value, the next new unit of the interpolation data in the memory is transferred into the shift register, whereby the transverse movement of the cutter is controlled synchronously with the rotation of the workpiece so as to machine a thread of a predetermined pitch thereon with high accuracy.

3,817,130
APPARATUS FOR MOVING CUTTERS IN MACHINES FOR SHAVING METALLIC ROD STOCK

Alfons Goeke, Solingen, Germany, assignor to Th. Kieserling & Albrecht, Solingen, Germany

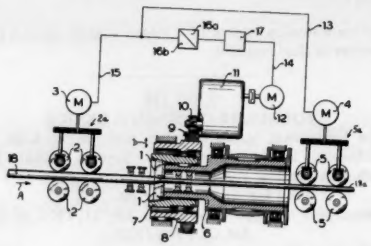
Filed Mar. 13, 1973, Ser. No. 340,822

Claims priority, application Germany, Apr. 28, 1972, 2220984

Int. Cl. B23b *5/12*

U.S. Cl. 82—20 **10 Claims**

A machine for shaving metallic rod stock has two spaced-apart sets of advancing rolls which transport a workpiece lengthwise and are driven by discrete motors so that the movements of one set of rolls are synchronized with movements of the other set of rolls. A rotary sleeve-like tool holder surrounds with clearance the workpiece between the two sets of advancing rolls and carries several radially extending cutters which are movable radially into and form engagement with the workpiece by an adjusting unit including a variable-speed transmission driven by a further motor. When the motors for the advancing rolls are arrested, the rolls continue to advance the workpiece for a certain interval of time due to inertia. In order to make sure that the cutters are disengaged from the



workpiece only when the lengthwise movement of workpiece is terminated, the motor for the adjusting unit is started with a certain delay following stoppage of the motors for the advancing rolls, whereby the length of such delay corresponds to the interval of lengthwise transport of the workpiece due to inertia of the rolls. The motor which operates the adjusting unit is started prior to starting of the motors for the advancing rolls so that the workpiece is set in motion simultaneously with termination of movement of cutters from retracted to operative positions.

3,817,131
APPARATUS FOR CUTTING RINGS FROM TUBES

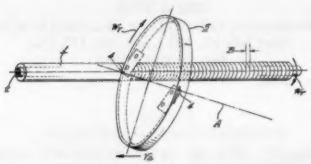
Lars Gosta Norlander, Partille, Sweden, assignor to SKF Industrial Trading and Development Company, B.V., Jutphaas, Netherlands

Filed Nov. 16, 1972, Ser. No. 307,084

Claims priority, application Sweden, Jan. 16, 1971, 14629/71

Int. Cl. B23b *3/04, 5/14, 1/00*

U.S. Cl. 82—101 **3 Claims**

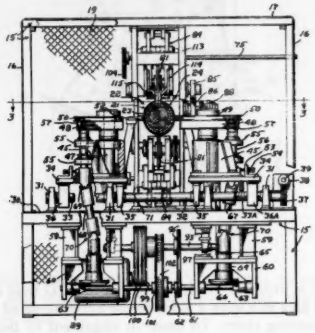


An apparatus for cutting rings from a tube comprises a mandrel for receiving the tube and a disc-shaped tool-holder carrying at its periphery a number of spaced cutting edges. The mandrel is rotated around its longitudinal axis at a constant rotational speed and makes one revolution while any one of the cutting edges is in cutting engagement with the tube. The tool holder is rotated around a predetermined axis at a lower constant rotational speed and simultaneously fed parallel to the tube at a constant linear velocity. The feed velocity and the rotational speed of the tool holder are adjusted to each other so as to permit the cutting edge in cutting engagement with the tube to move in a plane perpendicular to the tube axis.

3,817,132
MACHINES FOR STRIPPING INSULATION FROM CABLES

Manning Emery, 163 Main St., Yarmouth, Maine 04106, and Ronald L. Vacchiano, Box 402, North Windham, Maine 04101

Filed Mar. 3, 1972, Ser. No. 231,704
Int. Cl. H02g 1/12
U.S. Cl. 83—105 21 Claims

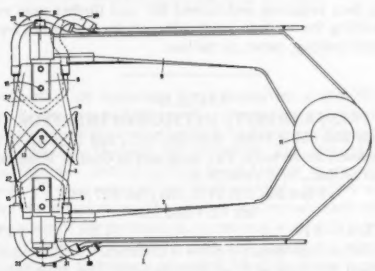


A machine is disclosed for stripping the insulation lengthwise from cables. The machine has a pair of cutters spaced apart with their cutting edges in a first plane and rotatably supported by adjustable means operable to move them equally towards and away from each other. The machine also has a cable feed including cable-gripping means at each side of said plane and provided with adjustable means operable to move the cable-gripping means equally towards and away from each other in a plane intersecting the first named plane at right angles midway between the cutters. The adjustable means for the cutters are independent of the adjustable means for the cable-gripping means.

3,817,133
GLASS SHEAR

Hendrik Romberg, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Jan. 30, 1973, Ser. No. 328,083
Claims priority, application Netherlands, Feb. 5, 1972, 7201535
Int. Cl. C03b 5/38
U.S. Cl. 83—171 2 Claims

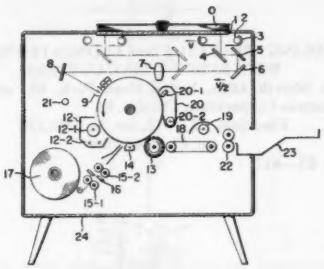


A glass shear having two co-operating shear blades of which the blade body is provided on both sides and substantially throughout the entire surface with a layer of material having a high coefficient of thermal conductivity, preferably silver; a cooling pipe is soldered on the silver layer on one side of the blade body.

3,817,134
DEVICE FOR CUTTING A ROLLED MEDIUM

Hajime Katayama, and Yoshimasa Kimura, both of Tokyo, Japan, assignors to Canon Kabushike Kaisha, Tokyo, Japan

Filed Dec. 22, 1972, Ser. No. 317,781
Claims priority, application Japan, Dec. 29, 1971, 46-1237
Int. Cl. G03g 15/00
U.S. Cl. 83—203 6 Claims

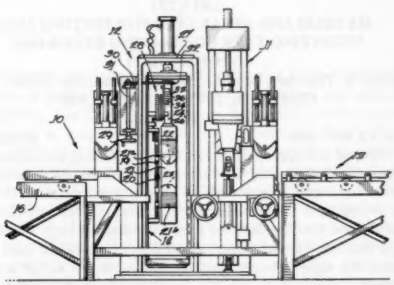


In a copying apparatus or the like using a rolled medium, a device for cutting the rolled medium into a predetermined length comprises cutter means, cutter operating means, rolled medium conveyor means and a conveying path both provided rearwardly of the cutter means. The device further includes second detector means operated by the rolled medium when a predetermined time T_2 has elapsed after cutting, and first detector means operated when a time T_1 determined by the length of the medium cut off has elapsed after the cutting. The first and second detector means are located so as to satisfy the relation that $T_3 > T_1 > T_2$, where T_3 is the time required for one cycle of operation. The cutter means is operated to effect an additional cutting operation when the first detector means properly operates but the second detector means does not do so.

3,817,135
FLANGE PUNCH POSITIONING APPARATUS

Raymond L. Valente, Kankakee, Ill., assignor to Manco Mfg. Co., Bradley, Ill.

Filed Oct. 30, 1972, Ser. No. 302,345
Int. Cl. B26f 1/14
U.S. Cl. 83—368 13 Claims



The embodiment of the invention disclosed herein is directed to a flange punch positioning apparatus for locating holes to be formed through flange portions of structural mem-

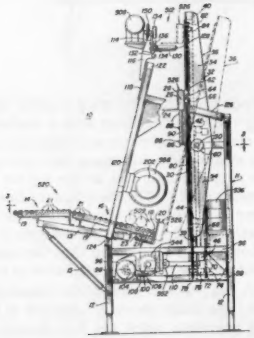
bers such as I-beams, channels, and angles. In the case of I-beams, the holes formed in the flanges are located with respect to the horizontal line or plane bisecting the horizontal web portions. In the case of forming holes in channels or angles the holes are located in the flange with respect to the bottom surface of the horizontal web. The apparatus automatically positions the punch at the desired height along the flange by using a pair of diametrically opposed axially movable sensing rods which engage both sides of the web portion of the structural member to sense the relative level of the web. Once the proper reference level is sensed, the punch mechanism is moved into position above and/or below the web and the hole is formed.

3,817,136

HANDLING APPARATUS FOR ELONGATED MASSES WITH ENDCROPPING CUTTERS

William Merrill Allen, Indian Head Park, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Filed Sept. 28, 1972, Ser. No. 293,152
Int. Cl. B26d *7/06*
U.S. Cl. 83—417 **7 Claims**



Apparatus for handling elongated loaves of food product, such as luncheon meat or the like comprises a table adapted to hold a plurality of the masses, means for mechanically elevating the masses from the table, and means for cropping an end of each mass as the mass is being elevated from the table. Preferably, the cropping means is adapted to crop simultaneously both ends of each mass as the mass is being elevated from the table.

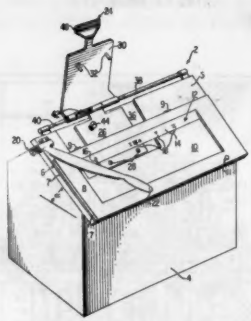
3,817,137

METHOD AND APPARATUS FOR EDITING AND MOUNTING TAPE CONTAINING RECORDED INFORMATION

Arthur K. Thatcher, Box 352, Merritt Island, Fla. 32952

Filed Apr. 6, 1973, Ser. No. 348,749
Int. Cl. B26d *9/00*
U.S. Cl. 83—444 **19 Claims**

Method and apparatus is disclosed for editing and mounting segments of recording tape containing prerecorded visual information, such as segments of an electrocardiogram (ECG) recording tape. The disclosed apparatus includes an editor for storing and feeding the tape past a window through which the tape may be viewed. Upon detection of a desired tape segment, the tape is halted and marked with the aid of a scale mounted adjacent the window opening. Thereafter, the tape is severed at each mark to form a segment having a longitudinal length corresponding to the particular type of information contained on the severed tape segment. In the preferred embodiment, the apparatus is adapted to process electrocardiographic recording tape and the editor scale includes a zero mark and a plurality of index marks spaced from the zero mark by distances corresponding to the desired longitudinal length of various groups of lead segments such as ECG leads I–III, V_1–V_6, aVR, aVL and aVF. The method includes mounting the lead segments in a predetermined overlapped



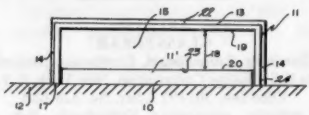
sequence in order to display all standard ECG lead segments within an area of 8 ½ by 8 ½ inches on a standardized lead segment mounting chart. To assist in alignment of the various lead segments, corresponding alignment holes may be formed in both the lead segments and mounting chart. A base having a plurality of upright pegs is provided to receive the mounting chart and punched segments in a predetermined arrangement.

3,817,138

STEAK OR MEAT CUTTING ASSEMBLY

Adolphe H. A. Lasker, 426 Scotia St., Winnipeg, Manotoba, Canada

Filed Aug. 30, 1972, Ser. No. 285,071
Int. Cl. B26d *7/02*
U.S. Cl. 83—466.1 **1 Claim**



A board supports the steak or meat and a guide box overlies the board and holds the meat firmly. Slots in the guide box permit a knife to cut through the meat onto the board. The box is then removed and turned 90° and further cuts made thus cutting the steak or meat substantially into cubes for use in kebab cooking, stews, or the like.

3,817,139

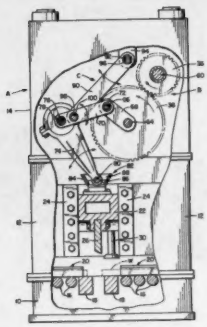
PRESS AND DRIVE MECHANISM THEREFOR

Prakash Dhirubhai Desai, Raleigh, N.C., and Sheldon Arthur Spachner, Havertown, Pa., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,453
Int. Cl. B26d *5/14*
U.S. Cl. 83—617 **1 Claim**

A billet or slab shearing press is disclosed which includes an improved mechanical drive arrangement. The drive arrangement includes a linkage system including a first link pivotally connected between the press slide and a second link which is connected to a driven crank. A third link is pivotally connected between the press frame and the second link. The several links are arranged to provide desirable kinematic and

dynamic characteristics for a shearing press by developing a selected coupler curve at the pivot point between the first and



second links, which coupler curve defines the movement of the slide, and accordingly the shearing blade, through the stroke of the slide.

3,817,140

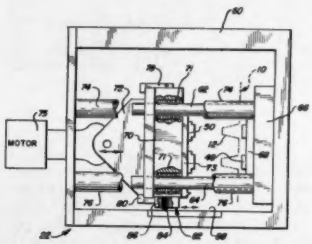
TRANSPORTING AND TRIMMER APPARATUS FOR PLASTIC FILM HAVING THERMOFORMED ARTICLES THEREIN

Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 133,125, April 12, 1971, Pat. No. 3,711,005. This application Aug. 14, 1972, Ser. No. 280,518

Int. Cl. B26f *1/02*

U.S. Cl. 83—635 **1 Claim**



Disclosed is an apparatus for transporting a thin film of plastic having integral therewith a thermoformed article of manufacture and protrusions which facilitate guiding and advancing the film through the apparatus. The apparatus includes first and second guides spaced apart to provide a pathway. At least some of the guides include grooves which receive the protrusions. The guides also include slots which expose some of the protrusions, permitting a moving indexing finger to extend through the slots and engage the exposed protrusions. A trimmer is provided which includes a punch and die, and a film locator which engages at least one of the protrusions and brings the article of manufacture into proper alignment in the punch and die. The block carrying the punch is spring-loaded and biased to counter gravity. This provides a free-floating assembly which facilitates alignment of the punch and die.

3,817,141

ULTRASONICALLY DRIVEN CUTTING KNIFE AND METHOD AND APPARATUS FOR CUTTING A SOFT YIELDING BAKERY PRODUCT

Sergio G. Simonetti, 15 Adams Farm Rd., Westport, Conn. 06880

Filed Nov. 24, 1971, Ser. No. 201,833

Int. Cl. B26d *1/06*

U.S. Cl. 83—651 **6 Claims**

A cutting blade ultrasonically driven and constituting an acoustical impedance transformer which has a longitudinal cutting edge and a length which is substantially equal to an integral number of half wavelengths at the frequency at which the blade is driven. Method and apparatus for cutting a soft yielding bakery product involving ultrasonically vibrating the knife blade that is to cut the product.

3,817,142

BAND KNIFE GUIDING DEVICE

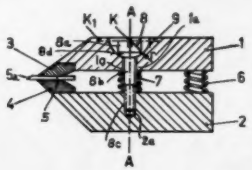
Karl Fingerle, and Korb Juergen Haag, both of Stuttgart-Hedelfingen, Germany, assignors to Fortuna-Werke Maschinenfabrik AG, Stuttgart-Bad Cannstadt, Germany

Filed Aug. 22, 1972, Ser. No. 282,836

Claims priority, application Germany, Sept. 3, 1971, 2144132

Int. Cl. B23d *55/08;* **B27b** *13/10;* **B26d** *1/54*

U.S. Cl. 83—820 **18 Claims**

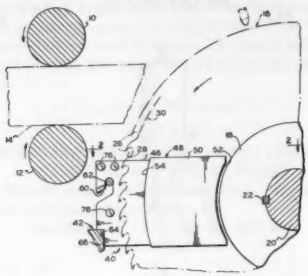


A longitudinally movable band knife of a leather splitting machine, is guided between edge portions of first and second guide plates. The lower guide plate is stationary, and the upper guide plate is mounted for universal movement about a fulcrum point so that the upper guide plate can be displaced about a first axis perpendicular to the cutting edge of the band knife, and about a second axis parallel to the cutting edge and intersecting the first axis at a fulcrum point so that the upper edge portion always has full contact with the moving band knife when a preferably self-locking biassing device turns the upper guide plate about the second axis to press with the respective guide edge portion against the band knife. Turning of the upper guide plate about a third axis perpendicular to the plane of the intersecting first and second axes, is prevented by blocking parts on the lower guide plate, projecting into openings in the upper guide plate located along the second axis.

3,817,143
EDGER

Aaron U. Jones, Eugene, Oreg., assignor to Seneca Sawmill Company, Eugene, Oreg.

Filed June 14, 1972, Ser. No. 262,702
Int. Cl. B27g 19/02
U.S. Cl. 83—823 10 Claims

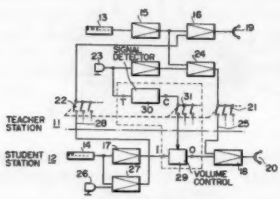


A pair of saw guides having planar bearing surfaces engaging opposite faces of a very thin circular saw from a point spaced substantially inward from the gullet line of the saw almost to axially shiftable saw collars mounting the saw on a driving arbor. The bearing surfaces are planes and have arcuate edges concentric with the arbor, and the inner edges of the guides, in effect, bracket the collars so that the guides can shift the thin saw and the collars along the arbor without bending the saw.

3,817,144
GROUP TEACHING SYSTEM FOR MUSICAL INSTRUMENTS

Eisaku Okamoto, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Mar. 15, 1973, Ser. No. 341,584
Claims priority, application Japan, Mar. 16, 1972, 47-26966
Int. Cl. G09b 15/00
U.S. Cl. 84—470 5 Claims

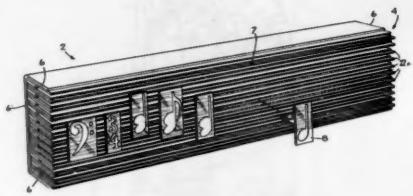


In a group teaching system for musical instruments comprising a teacher station and a plurality of student stations, each station is provided with an electronic musical instrument, a transmitter and a receiver so that the teacher and respective students can hear their musical sounds through their own receivers. The teacher can call a particular student by manipulating selector switches whereby the teacher and a selected student can exchange musical and speech signals. The presence of the speech signal from the teacher is detected by a speech signal detector to produce a control signal which is used to control a volume control circuit connected between the electronic musical instrument and the receiver of the selected student station to lower the volume of the output of the electronic musical instrument whereby the selected student can clearly perceive a call from the teacher.

3,817,145
MUSIC STAVE

Edgar A. Cohen, Miami Beach, Fla., assignor to Columbia Pictures Industries, Inc., New York, N.Y.

Filed July 7, 1972, Ser. No. 269,849
Int. Cl. G09b 15/02
U.S. Cl. 84—471 25 Claims

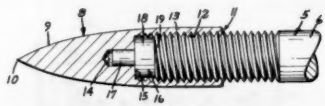


An apparatus and method for photo-mechanical compositing of music in which a collection of stiff strips are arranged within a frame in a horizontal configuration. The outer edges of five of the strips are coated white to provide the five lines of a music stave, on which notes and other musical symbols are mounted.

3,817,146
BOLT HOLE ALIGNER AND INSERTING TOOL

Wilbert Milo Scott, 808 13th Ave. W., Williston, N. Dak. 58801

Filed Oct. 24, 1972, Ser. No. 299,959
Int. Cl. F16b 35/00
U.S. Cl. 85—1 P 1 Claim



An elongated generally cylindrical body having one end portion tapering to a point and its opposite end having an internally threaded axial recess defining a flat transverse inner end wall surface for abutting engagement with the threaded end of a bolt, for aligning misaligned holes in work pieces to be bolted together and to guiding the bolt through the holes when hammer blows are applied to the head end of the bolt.

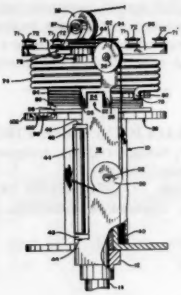
3,817,147
BRAIDER CARRIER

Donald Richardson, 70 Grandview Blvd., Reading, Pa. 19609

Filed Apr. 25, 1973, Ser. No. 354,457
Int. Cl. D04c 3/18
U.S. Cl. 87—57 16 Claims

A strand carrier for a high-speed maypole braiding machine, in which the strand pay-off point of each strand carrier is maintained in substantially the same orientation relatively to the braiding point during the travel of the carrier in its serpentine path around the braiding point. The strand carrier of the instant invention is of a construction providing for an increased capacity of the strand supply and includes a hinged upper section normally overlying the strand supply but which may be readily swung open to permit the replenishment of the

supply, the hinged upper section incorporating a slack take-up and strand-tensioning means, means for normally preventing rotation of the strand supply bobbin relatively to the carrier,



and means under the control of the strand take-up and tensioning means for releasing the bobbin for rotation in a strand pay-off direction when an additional length of the strand is required in the braiding operation.

3,817,148

CARTRIDGE FEEDING MECHANISM FOR FIREARMS

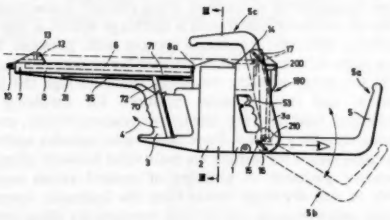
Hans-Ludwig Schirneker, House No. 46, Rons Vorarlberg 6822, Austria

Filed Apr. 30, 1971, Ser. No. 138,978

Claims priority, application Germany, May 2, 1970, 20215978; Jan. 7, 1971, 2100434

Int. Cl. F41d *9/00*; **F42b** *5/02, 11/00*

U.S. Cl. 89—155 **27 Claims**



A small calibre rifle having an optical sighting mechanism for indirect or direct sighting and employing extremely small calibre cartridges thereby substantially eliminating kickback. A cartridge roller is provided having a plurality of axial bores for receiving the cartridges, and locking means are provided for locking the roller in aligned position with the bore during firing. The cartridges are fed into and ejected from the cartridge roller in the same direction.

3,817,149

COMPENSATION OF UNBALANCE IN ROTARY BODIES

Wolf-Dieter Reutlinger, Darmstadt, Germany, assignor to Dr. Reutlinger & Sohne, Darmstadt, Germany

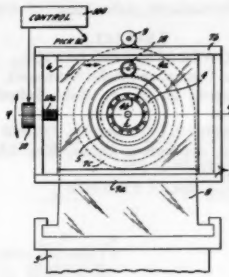
Filed June 8, 1973, Ser. No. 368,217

Claims priority, application Germany, June 26, 1972, 2231226

Int. Cl. B23c *3/06*

U.S. Cl. 90—11 C **14 Claims**

Unbalance of a rotary body is compensated by removing excess mass by means of an internal milling cutter cutting an eccentrically located groove that merges gradually into the undisturbed periphery of the body. The cutter is mounted on a slide in a frame so that feed advance of the cutter can take place along any predetermined radial direction with reference to the body axis. By turning the slide the groove can be lengthened, by shifting the tool axially the groove can be widened. Alternatively, the cutter can be mounted on a cross-slide system to be ameanable to component control of the feed advance, if the unbalance has been determined in components of ,e.g., an orthogonal coordinate system. Plural milling cutters can work on the same body simultaneously.



3,817,150

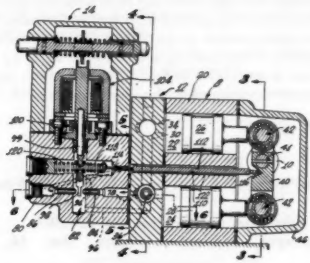
HYDRAULIC ACTUATOR WITH MECHANICAL FEEDBACK

Robert M. Cox, Northridge, Calif., assignor to SLI Industries, Van Nuys, Calif.

Filed Dec. 29, 1972, Ser. No. 319,165

Int. Cl. F01b *1/00*

U.S. Cl. 91—186 **11 Claims**



A hydraulic actuator having a selectively positioned, rotary output shaft. The actuator includes a control assembly in which a spool valve controls the admission and return of working fluid through a valve port. The spool valve position is controlled by a pilot assembly which communicates with valve chambers exerting pressure on opposite ends of the spool valve. The pilot assembly includes opposed nozzles connected with the valve chambers and a flapper between the nozzles which may be moved back and forth between them to variably restrict their output and hence the pressure in the valve chambers. The flow of fluid from the control assembly is directed to an output assembly which has first and second movable pistons mounted in piston chambers. The first piston chamber is continuously connected to a source of working fluid at supply pressure, while admission of fluid to the second piston chamber is controlled by the spool valve via the valve port. The pistons are connected by a link secured to an output shaft and exert opposing torques on the link. When fluid is directed into the second piston chamber, the second piston exerts the greater torque rotating the shaft in one direction. When fluid

is vented from the second piston chamber, the first piston rotates the output shaft in the opposite direction. A finger feeds back a portion of the motion of the link to the flapper via a spring to center the flapper when the output shaft is in a selected position.

3,817,151

POWER STEERING DEVICE

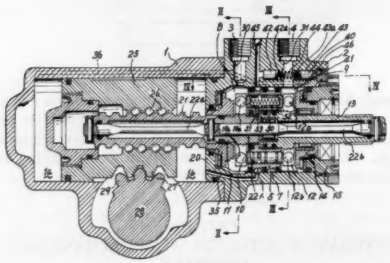
Minoru Kawabata, Ogawa, and Keiiti Nakamura, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed May 8, 1973, Ser. No. 358,450

Claims priority, application Japan, May 13, 1972, 47-47457; May 13, 1972, 47-47458

Int. Cl. F15b *9/10*

U.S. Cl. 91—375 **8 Claims**



A power steering device having a servo-valve for distributing fluid under pressure to a power cylinder unit connected to the servo-valve and serving to steer a vehicle, and comprising a variable restrictor in which a coil spring is provided across an outlet passage through which the fluid from the servo-valve is led to a reservoir. The coil spring variable restrictor is provided in the outlet passage perpendicular thereto and is actuated in response to the steering actuation for applying a back pressure so as to prevent a restriction noise which usually is generated in servo-valves when the same are actuated.

3,817,152

HYDRAULIC JACK

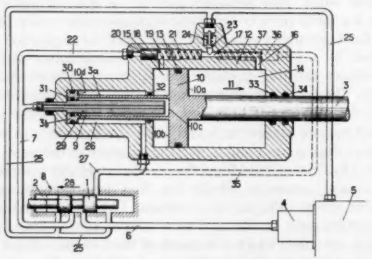
Michel Jean-Pierre Viron, 188 rue de la Jarry, 94 Vincennes, France

Filed Mar. 13, 1972, Ser. No. 234,087

Claims priority, application France, Mar. 18, 1971, 71.09525

Int. Cl. F15b *11/18, 13/07*

U.S. Cl. 91—411 A **9 Claims**



Fluid pressure system comprises a piston which is slidably mounted in a cylinder and divides said cylinder into two variable chambers, said chambers being interconnected through a by-pass, and said piston having two main surfaces, each exposed to the pressure in one of said variable chambers, and a third surface exposed to the pressure in a space other than one of said chambers, and means responsive to a predetermined increase in the pressure in said space to connect one of said chambers to a source of fluid pressure, to close said by-pass, and to connect the other of said chambers to exhaust.

3,817,153

HYDRAULIC CONTROL CIRCUIT

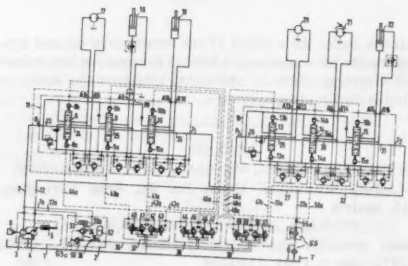
Egon Zunzer, Lohr, Main, Germany, assignor to G. L. Rexroth GmbH, Lohr/Main, Germany

Filed Sept. 27, 1972, Ser. No. 292,696

Claims priority, application Germany, Sept. 29, 1971, 2148502

Int. Cl. F15b *11/16, 1/02*

U.S. Cl. 91—411 R **8 Claims**



A plurality of valve units, each including a plurality of main valves connected in series in an idling conduit connecting the outlet of a control pump with a discharge space, is used for supplying hydraulic consumer motors with pressure fluid. Each main valve has an idling position for connecting the outlet of the pump with the discharge space through the idling conduit, and two operative positions for supplying and discharging fluid from the respective consumer motor, and for closing the idling circuit. Each main valve includes hydraulic operating means for shifting the main valve between idling and operative positions. A plurality of control valves supplies fluids to and discharge fluids from the hydraulic operating means, and a pressure control unit connects the idling conduit with the control valves. the pressure control unit includes a pressure reducing valve, a pressure fluid accumulator, a check valve between the accumulator and the pressure reducing valve so that a selected pressure is maintained in the hydrauiic operating means when the respective main valve is in one of the operating positions. Preferably, a pressure limiting valve is arranged downstream of the pressure reducing valve, and has a higher pressure than the same. A pressurizing valve is provided between the idling conduit and the discharge space for maintaining a pressure in the idling conduit by which the operation of the operating means is started.

3,817,154

APPARATUS FOR SUPPLYING FLUID TO A REVERSIBLE DRIVE ORGAN

Louis E. Martin, Senlis, France, assignor to Societe Anonyme Poclain, Oise, France

Filed May 22, 1973, Ser. No. 363,168

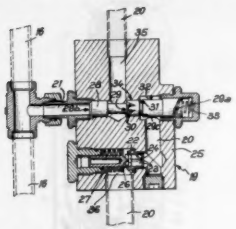
Claims priority, application France, May 31, 1972, 72.19573

Int. Cl. F15b *13/042*

U.S. Cl. 91—420 **4 Claims**

Fluid supply system for a double acting fluid drive mechanism having first and second drive chambers, the

system including a pump whose delivery is connected by a first conduit to the first chamber, a second conduit connecting the second chamber to a reservoir and including a one-way valve permitting flow only to the reservoir, a third conduit coupled to the second conduit, by-passing the one-way valve and including a flow limiter, a fourth conduit connected to the first



conduit and to the flow limiter, which latter comprises a discharge valve operable to maintain pressure in the third conduit upstream of the discharge valve and an adjustable valve between the second chamber and the discharge valve operable to control the pressure delivered by the second chamber in response to pressure in the fourth conduit.

3,817,155

HYDRAULIC RACK AND PINION STEERING GEAR

Wolfgang Walter, Schwabisch Gmund, Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Germany

Filed Dec. 1, 1972, Ser. No. 311,110

Claims priority, application Germany, Dec. 1, 1971, 2159487

Int. Cl. F16j *15/18*

U.S. Cl. 92—167 **11 Claims**

The reciprocating rack of a fluid operated steering gear is provided with a piston resiliently mounted for radial displacement relative to the rack to accomodate lateral flexure of the rack at the piston sealing point separating opposed pressure chambers. An end sealing device for one of the pressure chambers is carried on the free end of a pivotally mounted, tubular support and cooperates with the piston sealing arrangement to minimize friction and leakage resulting from flexure of the rack under load.

3,817,156

DEVICE FOR KINEMATIC CONNECTION

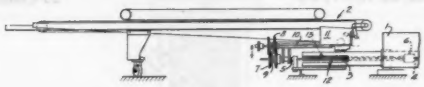
Henri Burkhalter, Chavannes, Switzerland, assignor to J. Bobst & Fils SA

Filed May 21, 1973, Ser. No. 362,003

Claims priority, application Switzerland, May 24, 1972, 7752/72

Int. Cl. B31b *1/92*

U.S. Cl. 93—36 R **8 Claims**



A device for kinematic connection of a drive shaft of a folder-sticker machine to a drive shaft of a receiver which handles the folded and glued boxes received from the machine comprising a flexible transmission cable connected to the drive shaft of the folder-sticker machine by a clutch arrangement and connected to the drive shaft of the receiver preferably by a speed variator. The kinematic connection enables positioning of the receiver both vertically and angularly with respect to the folder-sticker machine and is preferably provided with a pair of horizontal keeper plates which have the cable disposed therebetween.

3,817,157

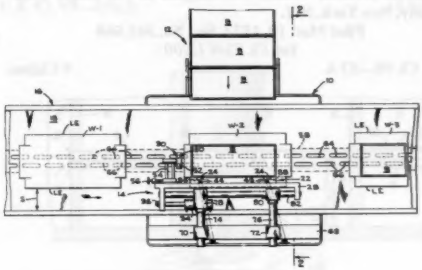
SHEET POSITION DETECTOR

William F. Andresen, Jr., Chalfont, Pa., assignor to FMC Corporation, San Jose, Calif.

Filed May 22, 1972, Ser. No. 255,744

Int. Cl. B31b *15/02*

U.S. Cl. 93—54 R **8 Claims**

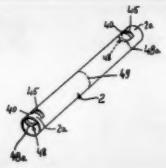


The present application discloses apparatus for combining two sheets, by use of an adhesive, in a desired relation. One sheet, which may have the adhesive applied thereto, is transported by an intermittently operable conveyor to a nominal location where combining with the other sheet occurs. Where such combining occurs, a positioning mechanism, controlled by light transmitting and receiving units, positions the other sheet with respect to the transported sheet such that the combined sheets define a desired positional relationship.

3,817,158
TUBULAR MOUTHPIECE AND METHOD AND APPARATUS FOR MAKING AND ATTACHING THE SAME

Guenter Wahle Reinbeck, and Rolf Dahlgruen, both of Tornesch, Germany, assignors to Hauni-Werke Koerber & Co. KG, Hamburg, Germany

Filed Aug. 11, 1972, Ser. No. 279,998
Claims priority, application Great Britain, Aug. 13, 1972, 38151/72
Int. Cl. A24c 5/50
U.S. Cl. 93—77 FT 29 Claims

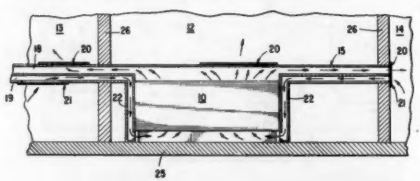


A tubular mouthpiece of double unit length without any filter material therein is produced by providing each end of a tubular body consisting of stiff paper or lightweight cardboard with at least one circumferentially extending incision to form strip-shaped portions which are thereupon depressed into the interior of the mouthpiece to constitute means for intercepting tobacco particles on their way into the mouth of a smoker. The mouthpiece is placed between a pair of wrapped tobacco rod sections and is connected thereto by means of an adhesive-coated uniting band to form therewith a mouthpiece cigarette of double unit length which is thereupon severed to yield two mouthpiece cigarettes of unit length of the type known as papyrossi. The incising and deforming operations can be carried out upon a series of discrete mouthpieces while they move sideways or upon a single file of integrally connected mouthpieces which travel lengthwise and form a continuous tube which is thereupon severed to yield discrete mouthpieces of double unit length.

3,817,159
DUCTED AIR CONDITIONING SYSTEM AND COMBINATION DUCT THEREFOR

James H. Bennett, Vienna, Va., assignor to The Singer Company, New York, N.Y.

Filed Mar. 19, 1973, Ser. No. 342,660
Int. Cl. F24f 13/00
U.S. Cl. 98—33 A 9 Claims

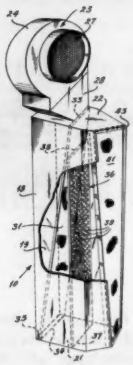


An air conditioning system for supplying conditioned air to a plurality of zones. A combination supply and return air duct connects the fan coil unit of either an incremental air conditioner or a central system with each of the zones to be supplied with conditioned air. The combination duct comprises a length of conduit having a partition extending therethrough to thus form supply and return air sections which are substantially completely sealed from each other, each of such sections being provided with a plurality of openings therein communicating the respective sections with the ambient environment in the zones and the return air section communicating with the fan coil unit for recycling of return air thereto.

3,817,160
AIR DOOR FOR COOLER OR THE LIKE

James A. Searcy, Florissant, and Milton A. Rasch, Ferguson, both of Mo., assignors to Hussman Refrigerator Co., Bridgeton, Mo.

Filed May 4, 1972, Ser. No. 250,447
Int. Cl. F24f 9/00
U.S. Cl. 98—36 6 Claims

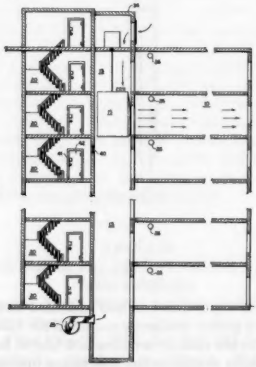


An air distribution system comprising an elongated duct disposed along at least one vertical side of an opening between a cold first zone and a warmer second zone, air moving means at one end of the duct forming a longitudinal air flow pattern in the duct, air distribution means for laterally diverting the air flow toward the side of the duct adjacent to the opening, and air discharge means constructed and arranged for discharging the air flow horizontally across said opening at a uniformly varying angle with the lowest level of the air flow being at a predetermined angle toward the cold zone and the uppermost level of the air flow being at a predetermined angle toward the warmer zone.

3,817,161
SMOKE PROTECTION SYSTEM

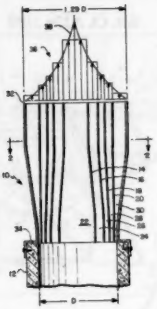
Norman A. Koplon, 3446 Buford Hwy., Apt. J.-1, Atlanta, Ga. 30329

Filed Oct. 26, 1972, Ser. No. 301,166
Int. Cl. A62c 3/14
U.S. Cl. 98—39 6 Claims



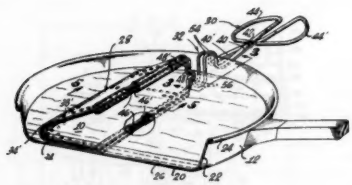
A smoke protection system for high rise buildings supplies a level of the building filled with smoke from a fire with air so as to displace the smoke from the building and reduce the hazard of suffocation.

3,817,162
FLUE STACK OUTLET
Gee Tsang Guelph, Ontario, Canada, assignor to Research Corporation, New York, N.Y.
Filed Mar. 27, 1973, Ser. No. 345,472
Int. Cl. F23l 17/02
U.S. Cl. 98—58 5 Claims



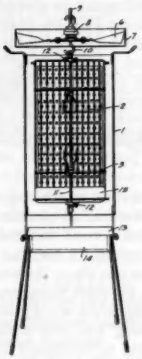
The effective height of smoke stacks is increased to minimize ground level concentration of the effluents entrained or contained in the issuing gases by minimizing the entrainment of the cold ambient air into the issuing plume, by modifying the exit velocity distribution of the gases. The invention may comprise an external extension or an internal attachment to existing stacks or the stack may include the features of the invention when it is designed and built.

3,817,163
COOKING UTENSIL
Theodore C. Kizziar, 4622 Cambury Dr., La Palma, Calif. 90620, and David W. Mays, 1290 Via Estrella, Palm Springs, Calif. 92262
Filed Sept. 27, 1971, Ser. No. 183,798
Int. Cl. A47j 43/18
U.S. Cl. 99—353 9 Claims



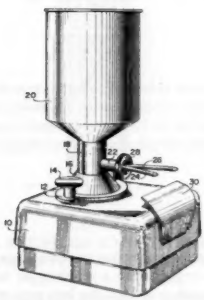
A cooking utensil used to prepare a taco shell within a frying pan has two arms pivoted together which close to sandwich a shell within a V-shaped holder. The arms, which may be swiveled together scissors-fashion, provide a handle disposed outwardly of the pan rim for manipulating the utensil, and the arms include a section with two juxtaposed oppositely facing, U-shaped sections or troughs, each with a horizontally disposed spanning segment for bridging the pan rim. The utensil is turned over between first and second horizontal cooking positions, and in each position the downwardly facing one of the trough segments bridges the rim.

3,817,164
GRILL DEVICE
Rainer Hintze, D 8443 Bogen/Donau, Germany
Filed Mar. 28, 1973, Ser. No. 345,749
Claims priority, application Germany, Mar. 30, 1972, 2215810
Int. Cl. A47j 37/04
U.S. Cl. 99—421 V 10 Claims



A cooking grill having at least one vertically standing spit wherein a propeller is arranged about a vertical axis in a position overlying the heating coals adjacent the spit and is drivingly connected to the spit, whereby rising heat from the coals will rotate the propeller and spit and wherein the spit is completely suspended from the propeller to minimize friction losses and permit a free pivoting action between propeller and spit.

3,817,165
INJECTION MECHANISM
Lewis D. Bartley, 7 Spofford St., Newburyport, Mass. 01950
Filed Mar. 31, 1972, Ser. No. 240,158
Int. Cl. A21c 9/06; B67d 5/30
U.S. Cl. 99—450.8 4 Claims

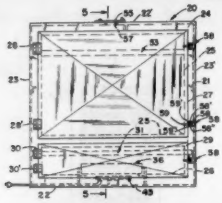


A piston pump with an adjustable stroke is connected through a one-revolution clutch to a motor-driven shaft to reciprocate through one cycle when a trigger is pressed. One stroke of the pump sends a measured amount of gel through a pair of hollow pointed spouts into objects penetrated by the ends of the spouts.

3,817,166
COOKING AND SMOKING OVEN DEVICE

Larry D. McLain, Box 524, Larimore, N. Dak. 58251

Filed Apr. 25, 1972, Ser. No. 247,377
Int. Cl. A23b *3/04*
U.S. Cl. 99—480 1 Claim

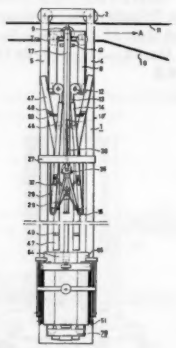


The invention comprises a cooking and smoking oven device. The oven device has an electric heating element to cook the meat and char a wood material to create smoke in the oven during the cooking for smoking the meat. The oven device also has a grease pan above the wood material to catch grease drippings from the meat being cooked and to prevent the grease from dripping on the wood product. The grease pan is removable for cleaning. The oven device also has a smoke vent which is operable to be closed after the cooking is completed to retain the smoke in the oven while the meat is cooling.

3,817,167
DEVICE FOR PACKING POULTRY

Jacob Hendrik Mosterd, En Merkenbureau De Wit n.v., 11, Surinamestraat, Netherlands

Filed Sept. 11, 1972, Ser. No. 287,840
Claims priority, application Netherlands, Sept. 10, 1972, 7112520
Int. Cl. A22c *21/06*
U.S. Cl. 99—485 11 Claims



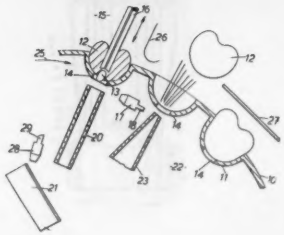
The invention relates to a device for packing poultry. A difficulty often occurring when a chicken or such like is automatically put into a bag is, that the legs may protrude, tear the bag or at least when not rightly folded against the breast, will deteriorate the attractive display of the packed chicken.

According to the invention retaining means lock the legs in claws, which allows pushing the legs by means of the claws into the bag in the right position. A further improvement consists in pressing on the cloaca of the chicken in order to stretch it when pushed in the bag. Also the claws are moved from a first spaced position in which it is easy to suspend a chicken on the claws into a position in which they are close to each other in order to bring them rightly into the bag.

3,817,168
FRUIT PITTING MACHINE

Derek Laurie Maytum, Norwich, England, assignor to Gunson's Sortex Limited, London, England

Filed Feb. 16, 1973, Ser. No. 333,224
Claims priority, application Great Britain, Feb. 22, 1972, 8138/72
Int. Cl. A23n *3/00*
U.S. Cl. 99—490 12 Claims

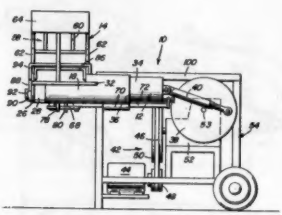


A fruit pitting machine comprises pitting means for removing pits from pit-containing fruit, separator means for effecting relative separation between pitted and unpitted fruit, means for presenting each of a plurality of pieces of fruit successively to the pitting means and to the separator means, a sonic transducer arranged to be struck by a pit removed from a piece of fruit by said pitting means, and control means, controlled by signals from said sonic transducer, for controlling operation of the separator means so as to effect the said relative separation.

3,817,169
CAN CRUSHER

Jack W. Bischoff, P.O. Box 174, Lovell, Wyo. 82431

Filed Oct. 27, 1972, Ser. No. 301,584
Int. Cl. B30b *15/30*
U.S. Cl. 100—100 14 Claims

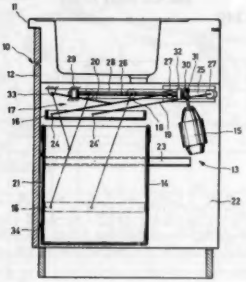


A can crusher having a reciprocating plunger which slides in a semicylindrical chamber to crush cans, and the like. The cans are fed into the chamber by one or more pivoting fingers arranged between adjacent, spaced rods forming a can supporting surface. A return movement of the plunger following a can crushing stroke actuates a linkage that pivots a can into the chamber, which has been left vacant by the previously crushed can passing through a slot at the end of the chamber. A pair of pins affixed to a finger supporting shaft are engaged by a pivoted lever to achieve the can feeding motion.

3,817,170
COMPACTOR FOR REFUSE

Rolf Mayer, Giengen, Germany, assignor to Robert Bosch Hausgeraete GmbH, Giengen, Germany

Filed Nov. 29, 1972, Ser. No. 310,419
Claims priority, application Germany, Dec. 15, 1971, 2162189
Int. Cl. B30b *1/18*
U.S. Cl. 100—229 A **5 Claims**

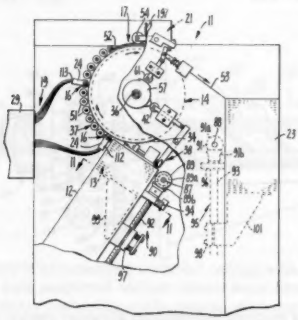


A refuse receptacle has an upper open end through which a platen can move in and out to compress refuse in the receptacle. A motor is connected with an element which is guided for horizontal movement and to which one arm of a two-arm parallelogram-linkage is pivoted, the other end of which one arm is pivoted to the platen. A guide lever is pivoted at one end to the aforementioned arm and at the other end to a stationary component of the compactor at a level above the receptacle. The purpose of the guide lever is to prevent lateral displacement of the platen out of its vertical path of movement.

3,817,171
SELECTIVE IMPRINTING MACHINE

Franklin Henry Ernst, Jr., 2500 Emerson St., Napa, Calif. 94558, and Dalny Travaglio, Kensington, Calif., assignors to said Ernst, by said Travaglio

Continuation of Ser. No. 99,346, Dec. 18, 1970, abandoned.
This application May 25, 1973, Ser. No. 364,010
Int. Cl. B44b *5/00*
U.S. Cl. 101—19 **33 Claims**

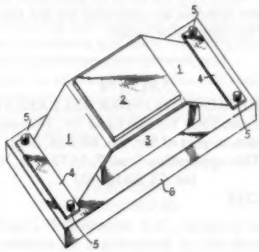


A selective imprinting machine of the type used for addressing mailed material, utilizing embossed card-sized media of the "credit-card" type having a matrix of perforations sensed for comparison against the master. The master is another perforated card with the perforations on both cards photoelectrically sensed. In one embodiment the cards move along a linear path, and in another they are carried on a rotating drum which also bears the master card. The media are placed on the drum by a rocker arm actuated by a cam driven by the drum, scanned simultaneously with the master for comparison and ejected tangentially from the drum to a receiver. A print signal is produced until inhibited by mismatch between the master and the individual embossed media. The elected media are imprinted against a receiving medium such as an envelope by a print roller, at the periphery of the drum, urged toward the periphery by a cam driven by the drum. The follower linkage for that cam has a movable link moved by an actuator in response to the absence of the print signal to disable the follower linkage. The cards are sensed by phototransistors, and the comparison between the individual card and the master is made by logic circuitry. The master has two hole locations for each hole location on the individual card, one hole location specifying presence of a hole on the individual card, and the other specifying absence of a hole on the individual card. A form is also shown having two receivers for the individual cards and a diverter operated in response to the logic circuitry to divert cards from the first receiver to the second.

3,817,172
MESH HEATED DIE

David Horton, London, England, assignor to Letraset International Limited, London, England

Filed Nov. 16, 1971, Ser. No. 199,131
Claims priority, application Great Britain, Nov. 17, 1970, 54662/70
Int. Cl. B44b *5/02*
U.S. Cl. 101—31 **4 Claims**



The invention concerns a die assembly for use in hot die and foil marking, comprising a cured silicone rubber die having a metal mesh heater element attached to its back, there being suitable current supply connections for the mesh.

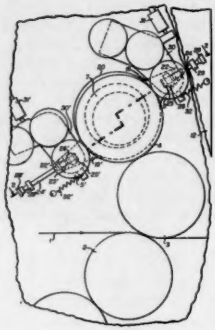
3,817,173
DIAGONAL REGISTER ADJUSTMENT OF PLATE CYLINDER AND APPLICATOR ROLLS IN A ROTARY PRINTING MACHINE

Peter Merbold; Helmut Morgenstern; Alfred Nietsch; Heinz Posselt, and Gerhard Scheunchen, all of Leipzig, Germany, assignors to Veb Polygraph Leipzig, Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Sept. 13, 1971, Ser. No. 179,716
Int. Cl. B41f *13/34, 7/02*
U.S. Cl. 101—218 **5 Claims**

An apparatus for diagonal register adjustment of a plate cylinder and applicator rollers for printing presses, and in par-

ticular rotary cylinder offset printing presses, which comprises a plate cylinder including bearings. Each of the bearings of the plate cylinder having an additional rotatably movable eccentric bushing and the angular adjustment of the bushing setting the plate cylinder oblique to an offset cylinder. Means are provided for positively controlling applicator rollers not tangent to the adjustment arc. The eccentric bushing for the diagonal



adjustment of the plate cylinder has a substantially axial groove, a pull-or push rod has a collar, and the latter is guided in the axial groove. A ring member has at least two arms, arranged loosely on the eccentric bushing between a wall and a safety ring fastened to the eccentric bushing. Angle pieces have threaded bores and the arms at their ends into the angle pieces. Movable spindles are provided for the fine adjustment of bearings of the applicator rollers.

3,817,174

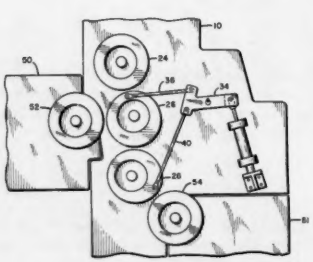
PRINTING PRESS CYLINDER RELEASE SYSTEM

Harold E. Paulson, 5369 Vernon Lake Dr., Dunwoody, Ga.

Continuation-in-part of Ser. No. 68,818, Sept. 2, 1970, abandoned. This application Sept. 7, 1972, Ser. No. 287,061

Int. Cl. B41f *7/02*

U.S. Cl. 101—218 **1 Claim**



The blanket cylinder and impression cylinder of a printing press are mounted in eccentric bearings at each end which bearings can be rotated by a multiple bell crank linkage from an air cylinder so as to disengage the cylinders in generally opposite directions from each other and generally away from all the plate cylinders in the press.

3,817,175

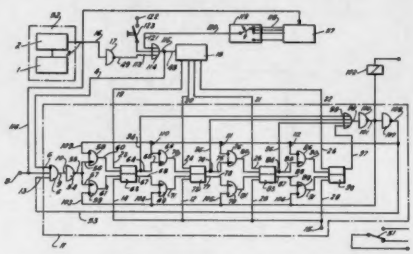
ARRANGEMENT FOR SEPARATING A SELECTABLE NUMBER OF SHEETS FROM THE MAIN OUTPUT OF A PRINTING PRESS UNDER PREDETERMINED OPERATING CONDITIONS

Hartmut Heiber, Radebeul; Karl-Heinz Forster, Dresden, and Werner Lein, Radebeul, all of Germany, assignors to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Mar. 30, 1973, Ser. No. 346,700

Int. Cl. B41f *13/64*

U.S. Cl. 101—240 **11 Claims**



The number of sheets to be separated from the main output upon occurrence of a predetermined operating condition is set into a code switch. When the main output is blocked or when a predetermined number of sheets has been received at the main output, or upon application of an external signal, the contents of the code switch are transferred to a counter. Signals signifying the passage of a sheet past a predetermined location are applied to the counter and the counter counts in reverse until zero is reached. While the counter is counting a relay controlling the direction of transport of the sheets transfers sheets to a second output station. When zero is reached the relay is again energized, causing the sheets to be transported to the main output again.

3,817,176

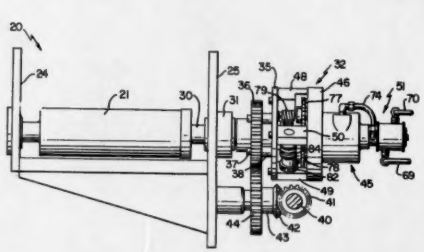
PRINTING CYLINDER REGISTER CONTROL UNIT

John E. Schultz, Cincinnati, Ohio, assignor to International Machine Products, Inc., Cincinnati, Ohio

Filed Nov. 2, 1972, Ser. No. 303,108

Int. Cl. B41f *13/12, 9/10*

U.S. Cl. 101—248 **3 Claims**

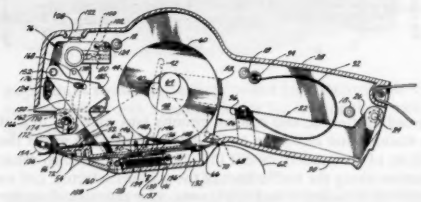


A printing machine incorporates a register control unit connected with the printing cylinder. The main line drive shaft provides power to drive the printing cylinder. Activation of the register control unit permit the advancing or retarding of the printing cylinder independent of the line drive during operation. A doctor blade holder is pivotally mounted to bring the doctor blade in contact with the anilox roll to insure uniform ink application.

3,817,177
HAND LABELER

Donald E. Van Arnam, Surfside, and Clifton P. Colwell, Claremont, both of Calif., assignors to Avery Products Corporation, San Marino, Calif.

Filed May 7, 1973, Ser. No. 357,678
Int. Cl. B41f 1/08
U.S. Cl. 101—288 14 Claims

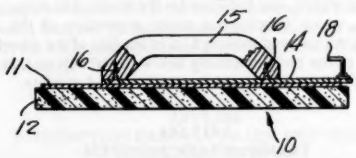


A hand labeler in which self-adhesive labels are dispensed, one at a time, from a carrier strip. A removable cassette stores the carrier strip and labels, the cassette including means for guiding the strip from the roll over a printing platen, around a label peeling and dispensing lip, and back along a guide surface. The labeler includes a housing and an actuating lever, the cassette being mounted on the actuating lever, the actuating lever being pivotally mounted in the housing. A reciprocating slide member carried by the actuating lever engages the carrier along the guide surface of the cassette. The slide member is reciprocally actuated by relative movement between the actuating member and the housing. Manually squeezing the actuating lever toward the housing causes the slide member to advance the carrier strip and to bring a printing device in the housing into engagement with a label opposite the platen on the cassette. A stop on the cassette limits the travel of the reciprocating member to control the incremental advance of the carrier strip with each operation of the actuating lever.

3,817,178
APPARATUS FOR ORNAMENTING WALLS AND CEILINGS

Dean C. Hagen, P. O. Box 145, Oxford, Iowa 52322

Filed Feb. 15, 1972, Ser. No. 226,420
Int. Cl. B41m 3/18; B41f 31/24; B41k 1/50
U.S. Cl. 101—379 10 Claims

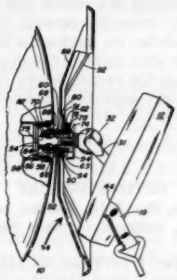


A method of ornamenting walls and ceilings which includes dipping a base supported resilient plastic foam pattern into a pourable slurry containing solids capable of coalescing into a solid mass, then pressing the pattern against the surface to be ornamented with sufficient force to expell said slurry from the pattern onto the surface, and removing the pattern from the surface to leave a pattern of slurry deposited on the surface. The pattern is guided by chalk lines marked on the surface and by a chain connected at one end to the base and at the other end to the surface to be ornamented.

3,817,179
PARACHUTE PACK WITH RELEASE MECHANISM

William P. Ludtke, and Carl R. Peterson, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 21, 1966, Ser. No. 567,335
Int. Cl. F42b 25/02
U.S. Cl. 102—4 6 Claims

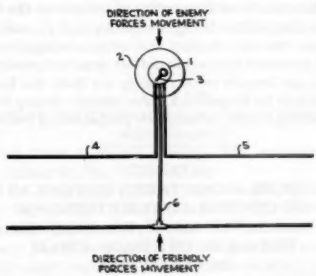


1. A parachute assembly for an aircraft launched mine comprising,
- a rupturable casing wherein the parachute is initially disposed in a folded condition,
- a static line connected between said parachute and the aircraft,
- means for retaining said static line in a folded condition until after mine launching and then releasing said static line to permit maximum extension thereof,
- a release mechanism initially connected to the mine,
- a riser line connected between said parachute and said release mechanism for effecting spacing of said release mechanism and mine from said parachute,
- means for retaining said riser line in a folded condition until after mine launching and then releasing said riser line to permit maximum extension thereof, and
- means formed on said casing for effecting rupturing thereof upon maximum extension of said riser line and said static line thereby effecting release of said parachute from said container by said static line.

3,817,180
MINE FUZES

Daniel W. Finger, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 20, 1964, Ser. No. 361,622
Int. Cl. F42c 7/02
U.S. Cl. 102—19.2 9 Claims



An electric land mine fuze comprising a detonator for initiating the detonation of an explosive, a firing capacitor for

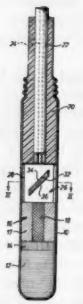
accumulating and storing a voltage, a power supply connected to said firing capacitor for charging said firing capacitor to a voltage sufficient to fire said detonator, first and second series connected normally open function switch means operated by the passage of a vehicle and electrically connecting said firing capacitor to said detonator whereby the voltage stored on said firing capacitor is transferred to said detonator causing said detonator to fire when said first and second function switches are closed by the passage of a vehicle, and a short-term voltage memory device connected between said first and said second function switches for storing the firing voltage from said firing capacitor when said first function switch closes before said second function switch thereby causing detonation when said first and said second function switches are sequentially actuated.

3,817,181

DETONATING CAP

Per-Anders Persson, Stockholm, Sweden, and Gosta Lithner, Brugherio, Italy, assignors to Nitro Nobel AB, Gyttorp, Sweden

Filed Jan. 3, 1973, Ser. No. 320,833
Claims priority, application Sweden, Jan. 5, 1972, 107/72
Int. Cl. C06c *7/00*
U.S. Cl. 102—29 **6 Claims**



This invention relates to a detonating cap for an explosive charge and devised to be initiated from a fuse of the type consisting of a flexible tube the inner wall of which is coated with a thin layer of a powder of a reactive substance. The detonation cap of the invention has the form of a sleeve containing at least one charge and a delay element interposed between the charge and the end of the fuse introduced into an open end of the sleeve. The delay element has a central channel for open communication from the end of the fuse tube to the charge. In order to prevent said channel from being clogged by powder particles detached from the coating of the tube or the free surface of the charge from being covered by such detached particles opposite the said channel, this latter is bridged over by a shield of a structure adapted to deflect detached powder particles or the gas impact wave rushing out from the fuse tube. This shield may be shaped as a valve initially closing the channel but opening it when actuated by the gas impact valve.

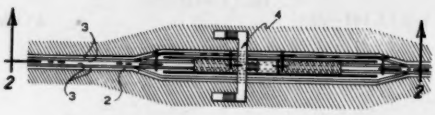
3,817,182

AUTOMATIC TRANSPORTATION SYSTEM CAR UNITS AND CONTROL CIRCUITS THEREFOR

Pierre M. Bourassa, 7415 Malo St., Brossard, Quebec, Canada

Filed Aug. 10, 1972, Ser. No. 279,632
Int. Cl. B61b *15/00*
U.S. Cl. 104—88 **10 Claims**

A transportation system, car units and control circuits adapted for automatic and efficient operation. The transportation system includes a main traffic line and station traffic lines bypassed by the main line and leading to stations elevated above the main line, an overhead track along each station traffic line, bottom tracks along the main line, car units having each a retractable assembly adapted to engage an overhead track to cause the elevation of the car units towards the corresponding station, and control circuits into each car unit at the stations and along the traffic lines arranged to select the stations of destination, detect the selected destinations, cause diversion along the traffic lines of the stations selected, call an empty car to a station and safely space the car units along the traffic lines.

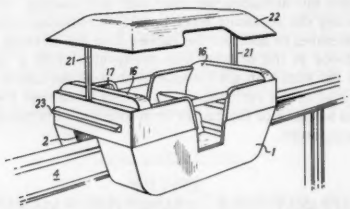


3,817,183

BATTERY POWERED ELECTRIC MONORAIL CAR AND TRACK SYSTEM

Thomas Bernard Hill, and Robin Darker Butterell, both of Buchanan House, 24/30, Holborn, London, England

Filed Oct. 25, 1972, Ser. No. 300,602
Claims priority, application Great Britain, Oct. 26, 1971, 49744/71
Int. Cl. B61b *13/04*; **B61c** *3/02*; **E01b** *25/10*
U.S. Cl. 104—119 **4 Claims**



A monorail car has a body for accommodating passengers with a hollow extending along its underside and two wheels one at each end of the car at the upper end of the hollow for engaging a monorail guide member from above. The car can be self-propelled by an electric motor, which drives one of the wheels, and batteries for the motor. The motor and batteries, which constitute a major proportion of the tare weight of the car, and mounted on either side of the wheels in portions of the body extending below the wheels so that the centre of gravity is low and the car has good stability.

3,817,184

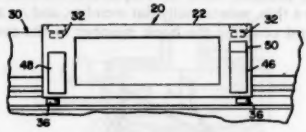
TRANSPORTATION SYSTEM

Neil S. Stafford, Rt. 3, Box 355, San Jose, Calif. 95121, and Justin M. Jacobs, Jr., 500 Sansome St., Suite 501, San Francisco, Calif. 94111

Division of Ser. No. 746,884, July 23, 1968, Pat. No. 3,606,839. This application July 21, 1971, Ser. No. 164,954
Int. Cl. E01b *25/06*
U.S. Cl. 104—131 **6 Claims**

The disclosure is of a transportation system which includes an elongated rail support which carries three parallel spaced-apart rails which serve as running surfaces. Two of the rails have running surfaces to accommodate guide wheels and the third rail has a running surface to accommodate guide wheels and the third rail has a running surface to accommodate a

main drive wheel of a powered rack member having wheels which move along the rails and which can carry various



payloads. A switch section is provided for selectively directing rack members over a main route or for moving them onto an alternative route.

3,817,185

DRIVE SYSTEM FOR AN AUTOMATIC ROAD NETWORK WITH PASSIVELY GUIDED VEHICLES

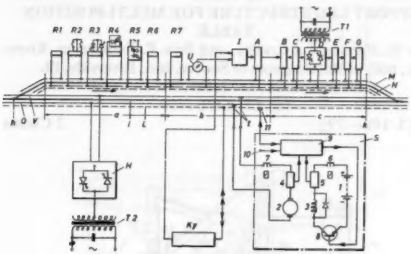
Gunter Eckerman, Dusseldorf-Benrath, and Heinz-Georg Ludwig, Haan/Rheinland, both of Germany, assignors to Kiepe Electric AG, Neuhausen am Rheinfall, Switzerland

Filed July 11, 1972, Ser. No. 270,787

Claims priority, application Germany, July 15, 1971, 2135263

Int. Cl. B60l *9/04, 15/04*

U.S. Cl. 104—152 **15 Claims**



In a drive system for an automatic road system with electrically powered passively guided vehicles and stations at which passengers may leave and enter, the improvement wherein each vehicle in said system is driven and braked by a direct current motor whose field coil is fed by a battery located in said vehicle and whose armature is fed with direct current through a vehicle conductor disposed along the road system, from at least one stationary apparatus in electrical association with the automatic road system which is provided with phase shift control.

3,817,186

INTERACTION RAILWAY TRACK AND VEHICLE STABILIZING SYSTEM

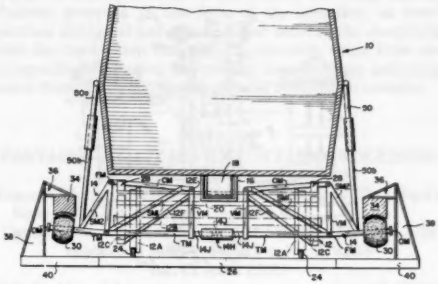
Robert L. Walsh, 3025 Cleveland Ave., N. W., Washington, D.C. 20008

Filed Aug. 18, 1972, Ser. No. 281,752

Int. Cl. B61f *5/00, 9/00, 13/00*

U.S. Cl. 104—243 **15 Claims**

A stabilizing system for railway coaches and locomotives particularly adapted for use in a high speed rail system includes auxiliary rails located along the main tracks in spaced parallel relationship thereto and on opposite sides thereof. The rails define downwardly facing track surfaces for engagement by rollers which extend outwardly on opposite sides from the vehicle trucks or bogies. The rollers are part of a stabilizer apparatus which includes pairs of support frameworks individually pivotably mounted on each truck and joined together by interconnecting linkages. The frameworks each



include a basic horizontal frame section hingedly mounted to the truck support structure and resiliently supported above the side frame of the truck by guide devices.

3,817,187

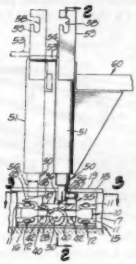
TOW TRUCK CONVEYOR CHAIN

John W. Thompson, Westminster, Calif., assignor to Westmont Industries, Sant Fe Springs, Calif.

Filed Aug. 21, 1972, Ser. No. 282,463

Int. Cl. B61b *13/00*

U.S. Cl. 104—172 BT **17 Claims**



A tow truck conveyor chain having an improved center link equipped with roller and latch detent means having multiple functions and advantages. The chain and its enclosing guideway is unusually compact and all parts of the chain proper are supported on rollers and out of contact with the guideway. The rollers and the latch detent are mounted on the center links and utilize to advantage the smaller dimensions of this portion of the conveyor chain to achieve marked savings in space and materials.

3,817,188

RAILWAY TRUCKS WITH PIVOTALLY CONNECTED SIDE FRAMES

Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.

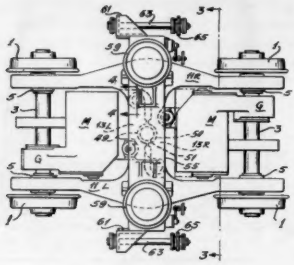
Filed Sept. 12, 1972, Ser. No. 288,267

Int. Cl. B61f *3/04, 5/14, 5/52*

U.S. Cl. 105—199 R **15 Claims**

Railway trucks for rapid circuit transit service are, in the interest of weight reduction without corresponding reduction in strength or riding qualities, formed with a pair of side frames supported at their ends from both axles and resiliently pivoted to each other on a generally transverse axis. To provide limited resilient support for propulsion and brake equipment

supported by the side frames, without permitting excessive vertical movement of third rail collection equipment mounted on the side frames, the support of the side frames on the axle



boxes is effected by slightly resilient single layer elastomeric chevron spring devices, the slight resilience of the chevron spring devices being sufficient to minimize necessary pivoting of the side frames about their transverse axis.

3,817,189

ROTARY DUMP BULK CARRYING RAIL CAR

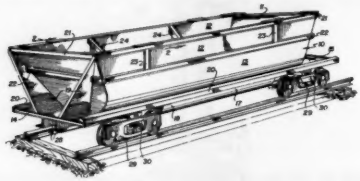
William Dale Bailey, Islington, Ontario, and Jan Zbigniew Tomaka, Outremont, Quebec, both of Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed May 10, 1972, Ser. No. 252,085

Claims priority, application Canada, June 8, 1971, 115135

Int. Cl. B61d *9/06, 17/08*

U.S. Cl. 105—406 **5 Claims**



A railway car body of the rotary dump type has side walls, bottom walls and end walls, the side walls having vertically upright upper portions and inwardly curving lower portions. Framing members embrace the side and end walls both along the top edges thereof and at the level where the side walls start to curve inwardly. The bottom wall includes a depressed centre section which is substantially semi-circular in vertical cross-section and merges smoothly with the inwardly curving lower portions of the side walls. The uitility of this car body resides in its simplicity of construction coupled with its light weight and the fact that its unloading characteristics are at least as good as those of conventional flat-sided transversely-framed open gondola cars.

3,817,190

COLLAPSIBLE TRAY WITH ADAPTABLE HOOK ARRANGEMENT

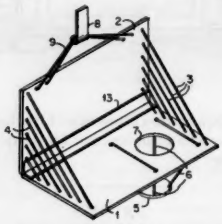
Helen Evangelista, 2190 MacKay Ave., Fort Lee, N.J. 07024

Filed Feb. 13, 1973, Ser. No. 332,106

Int. Cl. A47b *23/00, 37/00*

U.S. Cl. 108—44 **6 Claims**

A collapsible tray having an adaptable hook or suspension arrangement includes first and second tray members which are hingedly coupled together along one edge thereof and which are further flexibly coupled at at least one end thereof by means of a flexible cord member which supports the first tray member in a substantially horizontal position when the tray is in its operable or open state. The hook or suspension arrangement includes hook or suspension member which is preferably a thin, substantially flat member, and an additional flexible cord coupling the hook member to the second tray



member, the second tray member being substantially vertical in use. The flexible cord coupling the hook member to the second tray member substantially conforms to the surface from which the tray is suspended, especially when used with an automobile or other motor vehicle and when the tray is suspended from the door thereof.

3,817,191

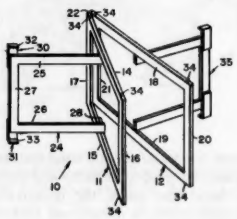
SUPPORT LEG STRUCTURE FOR MULTI-POSITION TABLE

James G. Hansen, La Grange, and Dale E. Fahnstrom, Riverside, both of Ill., assignors to Source, Inc., Riverside, Ill.

Filed Apr. 26, 1972, Ser. No. 247,695

Int. Cl. A47b *1/00*

U.S. Cl. 108—79 **2 Claims**



An approved support leg structure for a multi-position folding table provides for greater stability of the table in its various positions while, at the same time, rendering the table more useful by removing vertical leg obstructions at the primary use positions.

3,817,192

FURNACE, PARTICULARLY FOR COMBUSTION OF GARBAGE AND SEWAGE SLUDGE

Paul Gunnar Watterback, Stockholm, Sweden, assignor to Arbman Development AB, Stockholm, Sweden

Filed Mar. 9, 1973, Ser. No. 339,793

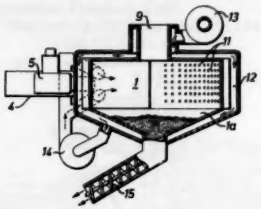
Claims priority, application Sweden, Mar. 13, 1972, 3161/72

Int. Cl. F23g *5/12*

U.S. Cl. 119—8 C **6 Claims**

A furnace, especially for combustion of garbage and sewage sludge comprises a cylindrical combustion chamber having a horizontal or vertical axis. The radius of the combustion chamber substantially corresponds to or is preferably bigger than the width or height, respectively, of the chamber which

has one or more tangential inlets and a central axially directed outlet. A spiral-shaped flame containing partly still unburnt particles rotating in the outer part of the combustion zone and



partly largely burnt dust-like ash particles rotating in or towards the centre of the gas whirl, which escapes through the gas outlet, is generated.

3,817,193

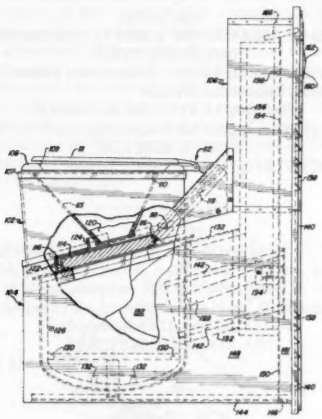
INCINERATOR

Donald P. Frankel, Lake Geneva, Wis., and William E. Kendall, Elgin, Ill., assignors to La Mere Industries, Inc., Walworth, Wis.

Filed Mar. 15, 1972, Ser. No. 234,852

Int. Cl. A47k *11/02*

U.S. Cl. 110—9 R **21 Claims**



An incinerating waste disposal device which includes a housing having a receptacle for receiving waste and a combustion chamber below the receptacle for receiving the waste from the receptacle and burning the waste. A passage communicates between the receptacle and the combustion chamber and a slide valve member is movably mounted for sliding transversely of a bottom receptacle opening defined by a lower marginal lip of the receptacle. A burner is disposed within the combustion chamber and is offset to one side thereof to effect a swirling burning action within the chamber as the burner directs a flame into the lower areas of the chamber to facilitate directing combustion gases upwardly from the chamber. A disposable, combustible cup member is adapted for positioning in the bottom of the receptacle and is movable with the waste into the combustion chamber for burning with the waste. Preferably, the receptacle is coated with a release material, such as silicone or the like, and the interior walls of the combustion chamber are fabricated of porous insulation type material capable of absorbing liquids to expose a greater area of liquid to heat and flame within the chamber. A water chamber surrounds and insulates the sides of the receptacle from heat emanating from the combustion chamber. The water may be delivered to the receptacle for flushing purposes. In one form of the invention, an intermediate storage chamber is disposed between the receptacle and the combustion chamber for receiving waste from the receptacle and a pump is provided for selectively delivering waste from the storage chamber to the combustion chamber.

3,817,194

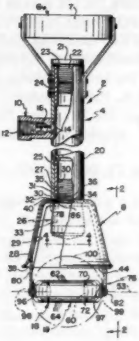
PORTABLE UTILITY DEVICE FOR FLUID PROCESSING OF DELETERIOUS MATERIAL

Francis Warren Seebald, 18801 E. Shoreland Dr., Rocky River, Ohio 44116

Continuation-in-part of Ser. No. 869,598, Oct. 27, 1969. This application July 10, 1972, Ser. No. 270,318

Int. Cl. A01c *23/02*

U.S. Cl. 111—7.1 **10 Claims**



A portable utility device for fluid processing of deleterious material disposed on the ground and including an elongated, tubular frame defining a fluid receiving chamber. A handle is mounted at one end for manipulating the device and a spray assembly including a spray head is mounted at the opposite end for spraying fluid from the chamber. A selectively actuatable valve assembly is mounted on the body being connected to a source of pressurized fluid for controlling the flow of fluid through the spray assembly. A shredding assembly is mounted on the body including a shredder for shredding deleterious material, and the shredder is spaced outwardly from and aligned with the spray head being disposed in the path of the spraying fluid for dissolving the deleterious material and cleaning the shredder when the device is in use.

3,817,195

FOOT FOR THE SEWING OF BLIND STITCHES ON SEWING MACHINES

Gunter Meier, Weingarten, Germany, assignor to Pfaff Haushaltsmaschiner GmbH, Karlsruhe-Durlach, Germany

Filed Feb. 21, 1973, Ser. No. 334,280

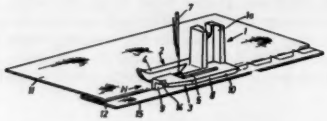
Claims priority, application Germany, Mar. 15, 1972, 7209847

Int. Cl. D05b *29/00*

U.S. Cl. 112—235 **5 Claims**

A foot for the sewing of blind stitches comprises a substantially vertically arranged shank portion having a lower end connected to a substantially flat foot sole which extends outwardly from the shank portion and which includes a toe part having an upturned forward end for guiding the material thereunder. The foot sole also includes a narrow short intermediate web which terminates rearwardly of a needle slot formed between the web and an inturned portion of a for-

wardly extending elastic stop arm. The stop arm is widened at its front end ahead of the intermediate narrow short web and it includes a downturned face opposite to the toe part which



forms a guide tongue for guiding the material which is fed toward the needle which reciprocates in a slot located between the rear end of the laterally extending portion of the stop and the front end of the intermediate short web portion.

3,817,196

AUTOMATIC GUIDE DEVICE FOR SEWING MACHINE OR MACHINE FOR ASSEMBLING TWO OR MORE SUPERPOSED ELEMENTS

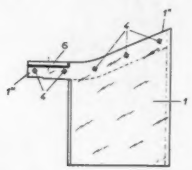
Wolfgang Heiler, Soufflenheim; Rudolf Muller, Sessenheim, and Jean-Jacques Becker, Bischheim, all of France, assignors to Vestra-Union S.A., Paris, France

Filed Apr. 10, 1972, Ser. No. 242,619

Claims priority, application France, Apr. 23, 1971, 71.15294

Int. Cl. D05b *35/00, 35/10*

U.S. Cl. 112—151 **3 Claims**



The disclosure is of a device permitting the automatic passage of a fabric element or an element of other material beneath the working tool of a machine, which device is characterised in that it is constituted by an upper plate, preferably of transparent material, by a base plate and by a lateral guide piece, which are assembled with one another by means of screws or the like.

The invention can be utilized as a guide element, especially in automatic overcasting, leather-stitching and welding machines.

3,817,197

NEEDLE THREADING DEVICE ASSEMBLED ON SEWING MACHINES

Nereo Bianchi, Pavia, Italy, assignor to Necchi Societa per Azioni, Pavia, Italy

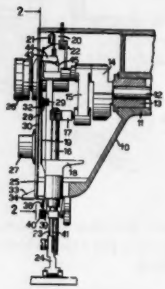
Filed June 14, 1973, Ser. No. 370,147

Claims priority, application Italy, June 27, 1972, 42914/72

Int. Cl. D05b *87/02*

U.S. Cl. 112—225 **7 Claims**

A needle threading device for a sewing machine having its head closed laterally by a cover which includes a small plate supporting a needle threading hook having a longitudinal groove in its upper end, on its lower end a vertical wall insertable in a groove in the cover, a horizontal section adjoining the vertical wall which enables the operator to move the plate, two sections at right angles to each other on the lower end thereof, the first of which is horizontal and provides an edge to line up the threading hook with the needle eye of the machine and the second of which is vertical and provides support for the hook and a centering spring element, a reference element having a plane surface slanting with respect to the horizontal which may rest on the top of the needle bar of the machine and an oblique portion at its upper end to permit transversal



oscillation of the hook lining up with the needle eye; a pin provided on the internal wall of the cover and engageable with the groove of the plate and a spring on the pin to constrain the plate against the internal wall of the cover.

3,817,198

METHOD OF ASSEMBLING A METAL CONTAINER BY A SOLDERED STRIP

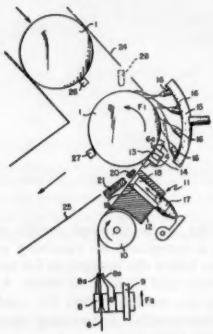
Charles Julien Martin Leblois, Douarnenez, France, assignor to Franpac, Douarnenez, France

Filed Oct. 31, 1972, Ser. No. 300,525

Claims priority, application France, Nov. 2, 1971, 71.39311

Int. Cl. B23k *1/18*

U.S. Cl. 113—120 Q **12 Claims**



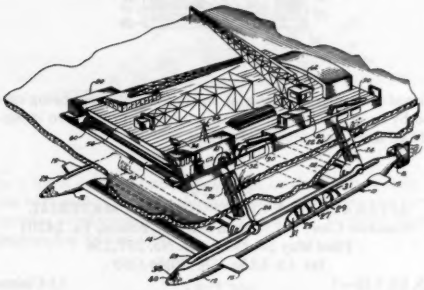
A method and apparatus for soldering a metal strip over the junction of the end and body of a metal container in which one end of the strip is secured to the container and the container is rotated to wind the strip around the container while maintaining the strip under constant tension. The strip is heated over a portion after the point of contact to melt a solder coating on the face of the strip which is against the container. After the strip has been soldered around the perimeter a strip is left unheated to provide a tear off tab.

3,817,199

LANDING CRAFT FOR CONVEYING DRY CARGO OVER ICE

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Filed Mar. 2, 1972, Ser. No. 231,154
Int. Cl. B63b 35/12
U.S. Cl. 114—42 25 Claims



There is provided a vessel consisting of one or more submerged propulsion hulls connected to a cargo carrying platform suspended over ice by a plurality of interconnecting columns. At least the frontal columns contain ice chipping systems for cutting a path through ice between the submerged hull or hulls and the platform. The columns are preferably pivotably mounted to both the hull or hulls and the platform to permit adjustment of the angle of the column during the ice cutting function and to permit the platform to be lowered onto the surface of the ice when the cargo meets its destination.

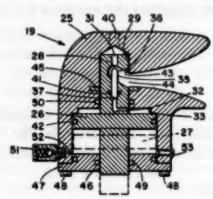
In the preferred construction, the platform carries a pallet upon which cargo is stored during transit. The pallet is slidably mounted on the platform and can be removed at the destination. Once the cargo is removed, it may be returned to the platform for a return trip.

3,817,200

AMBIENT PRESSURE POWERED CABLE CUTTER

Frederick R. Hess, Waquoit, and Sydney T. Knott, Bardstable, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 19, 1971, Ser. No. 135,409
Int. Cl. B26d 1/26, 7/16, 5/02
U.S. Cl. 114—221 A 20 Claims



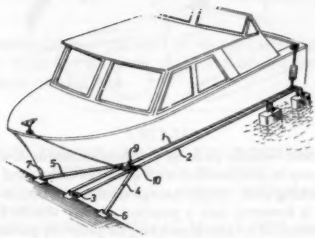
An underwater cable cutter consisting of a piston accommodated within a cylinder head and isolated from ambient pressure until the cable to be cut releases said pressure is provided. The trigger device is a glass tube sealed at its exposed end and open to a piston chamber at its open end. The piston is connected to a guillotine cutter positioned in the throat of the device such that the cable to be cut when guided into the throat actuates a valve, releasing water under ambient pressure through the open end of the valve to the exposed surface of the piston. Movement of the piston causes the guillotine cutter to sever the cable.

3,817,201

OUTRIGGER FOR MOORING OF BOATS

Klas Olof Tellberg, Rattarbacken 6, Saltsjo-Duvnas, Sweden

Filed Jan. 28, 1972, Ser. No. 221,578
Claims priority, application Sweden, Jan. 29, 1971, 1121/71
Int. Cl. B63b 21/00
U.S. Cl. 114—230 4 Claims



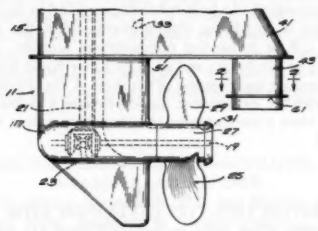
Boat mooring outrigger comprising a boom attachable perpendicularly to a quay, the end of the boom facing the quay having cross-stays extending at an angle to the boom and attachable to the quay, the cross-stays being detachably fitted to the boom by means of fastenings partially gripping around the boom and mating with the boom by means of a fixing device which, through the action of a locking device, fixes the position of the fastenings relative to the boom.

3,817,202

ANTI-VENTILATION FENCE FOR A TRIM TAB

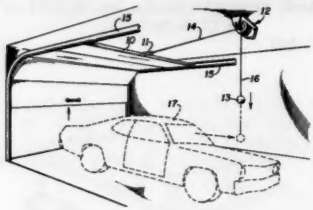
Theodore J. Holtermann, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 5, 1973, Ser. No. 376,408
Int. Cl. B63h 21/23
U.S. Cl. 115—34 7 Claims



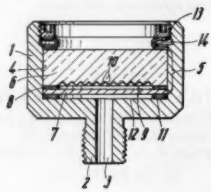
Disclosed herein is a stern drive unit including a trim tab extending from a drive shaft housing behind a propeller and downwardly into an imaginary cylinder projecting rearwardly in concentric relation to the propeller axis from the path of the tip of the propeller, and a generally horizontally projecting barrier extending from the trim tab and located below the intersection of the imaginary cylinder and the trim tab.

3,817,203
VEHICLE POSITION INDICATOR
William Alvin Brauer, 28 W 384 Gary's Mill Rd., Winfield, Ill. 60190
Filed Sept. 29, 1972, Ser. No. 293,416
Int. Cl. B60q
U.S. Cl. 116—28 R **6 Claims**



A movable vehicle parking position indicator is disclosed which moves in conjunction with a garage door used to close off the parking area. As the garage door is opened, a ball-like indicator is lowered into a position clearly visible from the driver position of a vehicle entering or properly parked in the garage. As the door is closed, the indicator is retracted.

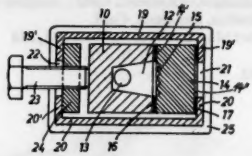
3,817,204
DEVICE FOR INDICATING CRITICAL TEMPERATURES
Friedrich Schittek, Passauer Strasse 39, 28 Bremen, Germany
Filed Jan. 9, 1973, Ser. No. 322,273
Claims priority, application Germany, Jan. 12, 1972, 2201203
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **6 Claims**



A device for indicating limiting temperatures of a fluid medium consisting of a hollow housing coupled to the medium and having a measuring compartment within the housing. Pressure cell or measuring compartment includes a stroke membrane or diaphragm and an evaporative liquid for sensing the temperature and pressure of the fluid. A visual indicator in contact with the evaporative liquid provides a visible indication only when a predetermined limiting temperature has been exceeded.

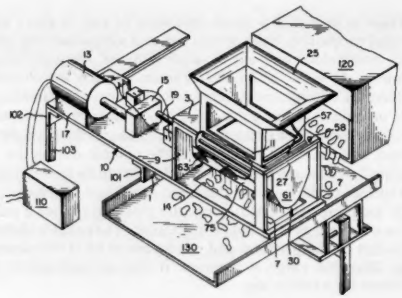
3,817,205
REFLECTION-TYPE LEVEL INDICATOR
Giulio Bonetti, Milan, Italy, assignor to Klinger AG, Zug, Switzerland
Filed Apr. 6, 1973, Ser. No. 348,597
Claims priority, application Italy, Apr. 7, 1972, 22911/72
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 R **5 Claims**

A reflection-type level indicator for liquids incorporating a holding element having in a plane face a longitudinal groove forming a chamber containing the liquid the level of which is to be measured, and a crystal with two opposite plane faces, one of said faces adjoining said plane face of the holding element being provided with longitudinal prisms facing said chamber which is provided with openings communicating with



a liquid container, said crystal and holding element being carried by an external mounting structure comprising two identical half shells held together by rings.

3,817,206
APPARATUS FOR COATING EDIBLE MATERIAL
W. Woodrow Case, 1413 Green Hill Rd., Bristol, Va. 24201
Filed May 26, 1972, Ser. No. 257,236
Int. Cl. A23g *3/20;* **B05c** *5/00*
U.S. Cl. 118—7 **13 Claims**

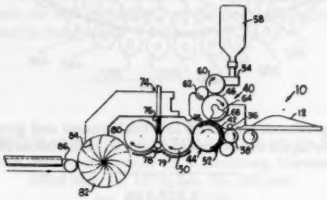


A flavoring machine of multiple configurations organized around a basic frame and dispenser head combination is provided wherein the machine parts contacting the edible material are easily cleaned; the material being discharged through a dispensing head which includes a readily disconnected drive connection to a power source and means are provided for securely fixing the head to the frame to form the basic frame-head combination. Feed of material to the dispensing head is via a screw conveyor from a material source or sources of various configurations adapting the machine for its place of installation.

3,817,207
GUMMING DEVICE
Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smith Machine Company, Inc., Duncansville, Pa.
Filed June 29, 1972, Ser. No. 267,530
Int. Cl. B05c *1/02*
U.S. Cl. 118—50 **8 Claims**

The envelope machine includes apparatus to fold the side flaps of the envelope blank and convey the envelope blank to a gumming device. The envelope blank is engaged by vacuum on a bottom flap folding cylinder positioned below a gumming roller. The gumming roller has applicator segments with arcuate surfaces that are arranged to apply strips of gum to the side flaps of the envelope blank as it is supported on the ends of radially extending bristles on the blank support brush portion of the bottom flap folding cylinder. The envelope blank with the gum applied to the side flaps is conveyed between the bottom flap folding cylinder and a transfer cylinder where the

bottom flap is folded over the side flaps. Thereafter the transfer cylinder conveys the envelope to a seal flap folding device where the seal flap is folded over the bottom flap. From the seal flap folding device the finished envelope is conveyed



to a spiral delivery disc. The bristles on the brush portion of the bottom flap folding cylinder terminate in an arcuate semicircular configuration that conforms to the diameter of the bottom flap folding cylinder.

3,817,208

COATING APPARATUS FOR SHEET MATERIAL

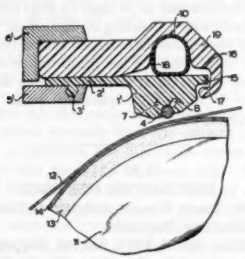
Wolfgang Barnscheidt, Straberg/Neuss; Hans Sollinger, Baienfurt/Wurtt, and Franz Krautzberger, Heidenheim/Brenz, all of Germany, assignors to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung, Duesseldorf-Oberkassel, Germany

Filed Oct. 10, 1972, Ser. No. 295,962

Claims priority, application Germany, Oct. 13, 1971, 2150906; Oct. 13, 1971, 2150907

Int. Cl. B05c *11/02*

U.S. Cl. 118—119 **10 Claims**



The doctor blade assembly of a coating apparatus has a metal rod rotatable about its longitudinal axis and partly received in the operating portion of an elongated, unitary holder body of elastomeric material which also has a plate-shaped mounting portion, a part of the mounting portion remote from the operating portion being fastened to a fixed support for flexing of another part of the mounting portion for resilient movement of the operating portion and of the rod received therein toward and away from a backing roll for the sheet material to be coated.

3,817,209

GRAVURE COATING

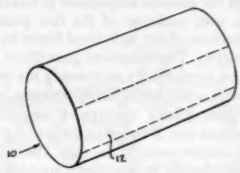
Albert T. Zurick, Glen Rock, N.J., assignor to Van Vlaanderen Container Machinery, Inc., Paterson, N.J.

Filed Feb. 16, 1973, Ser. No. 333,185

Int. Cl. B05c *1/08*

U.S. Cl. 118—258 **8 Claims**

A variable gravure pattern is employed on a gravure cylinder used in the overlapping coating of a cylindrical body, such as a so-called tin can, with paint or shellac. The overlapping coating provides a substantially uniform coat because of the variable gravure pattern while avoiding the pronounced



line of demarcation at the start of the coat and at the end of the coat which occurs when there is a double thickness of coating in an overlap area.

3,817,210

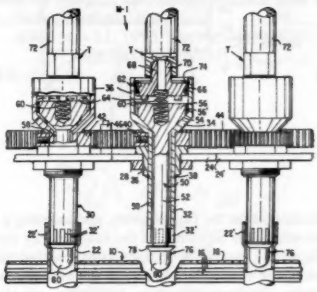
APPARATUS FOR COATING THE INTERIOR END PORTION OF A TUBE JOINT

James E. Greever, Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 825,662, May 19, 1969, abandoned. This application Mar. 3, 1972, Ser. No. 231,680

Int. Cl. B05b *13/06;* **B05c** *5/02*

U.S. Cl. 118—408 **1 Claim**



The present invention is directed to the bonding of tube joints exemplified by the securement of bell and spigot tube ends on plate fin or spiral fin coil units employed in refrigeration apparatus, the bonding process being characterized in part by accurate metering of a predetermined quantity of a thermosetting structural adhesive to particular locations on the mating tube joint members and productive of an extremely high strength bond therebetween resistive to deterioration after long exposure to normal environmental conditions.

3,817,211

APPARATUS FOR IMPREGNATING STRANDS, WEBS, FABRICS AND THE LIKE

Alfred W. Brown, Woonsocket, R.I., and Richard J. Moran, Norton, Mass., assignors to Owens-Corning & Fiberglas Corporation, Toledo, Ohio

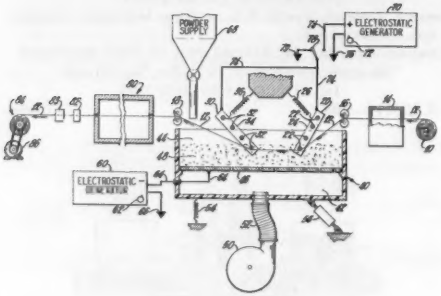
Filed Feb. 22, 1972, Ser. No. 227,958

Int. Cl. B06b *5/02*

U.S. Cl. 118—630 **17 Claims**

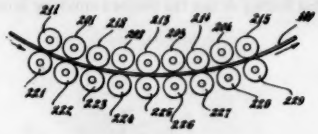
A preferred embodiment of the invention is illustrated in an apparatus for impregnating a glass fiber strand. Particulate impregnant material is provided in a gaseous suspension. The particles of impregnant material are electrically charged with charges having a first polarity. The individual glass fibers are treated to render the surfaces thereof at least semi-conductive electrically. The glass fiber strand is opened and the individual

glass fibers are separated from each other by electrostatically charging the semi-conductive surface of each of the fibers with charges having a second polarity, thereby causing the fibers to repel each other. The strand of separated glass fibers is passed through the gaseous suspension to enable the attraction of particles with a charge of the first polarity and adherence to the surface of the individual fibers having charges of the second polarity. The individual glass fibers in the strand may be treated by controllably moistening the strand to provide the fibers with a surface layer of moisture, as by passing the strand of glass fibers through a steam bath which penetrates the strand and, if the strand has sizing thereon, softens the binding components of the size. The individual glass fibers may be also treated by applying a sizing which includes an electrolytic material to the fibers before gathering the fibers together into the strand form, the electrolytic material having ions which are opposite in polarity to the electrostatic charges on the particles. The step of opening the strand may include generating an electrostatic field to provide the particles with charges on the first polarity, and locating a grounded electrode within the influence of the first polarity electrostatic field. The strand passing in contact with or within the range of influence of the electrode and also in the influence of the first electrostatic field enables the induction of electrostatic charges of the second polarity on the surfaces of the fibers in the strand. Alternately, the strand may be grounded before it enters the first electrostatic field, and then passed through the first electrostatic field in a fluidized bed of particulate impregnant and within the range of influence of an electrode disposed within the first electrostatic field. As a still further alternative, a second electrostatic field may be generated to charge the surfaces of the fibers with the charges of the second polarity. After adherence to the strand the particles may be coalesced to substantially coat each one of the fibers, and the fibers may be gathered together to provide a unitary, substantially impregnated multi-fiber strand. The invention is also applicable to webs, fabrics, and the like, made from multi-filament strands.

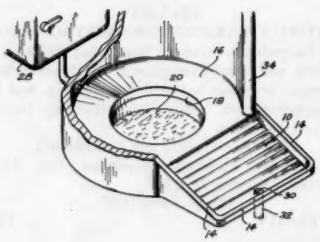


3,817,212
ELECTROSTATOGRAPHIC LIQUID DEVELOPMENT APPARATUS
Osamu Fukushima, Tokyo, and Masamichi Sato, Asaka, both of Japan, assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 10, 1972, Ser. No. 216,548
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **2 Claims**

An apparatus for liquid development of an electrostatic latent image carried on an electrostatographic member. The apparatus includes at least one development electrode with roller means, the outer surface of said roller being spaced from the latent image carrying surface by a distance which ranges from greater than 30 up to about 100 microns. This apparatus produces images of low background and good image density by liquid development of electrostatic latent images.

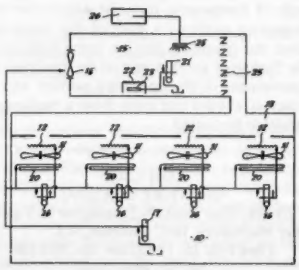


3,817,213
TOILET DEVICE FOR USE BY DOGS
John Stuart Chalmers, Montreal, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed June 6, 1973, Ser. No. 358,675
Int. Cl. A47k *3/00*
U.S. Cl. 119—1 **2 Claims**



A toilet device adapted to be used by dogs inside a building. A floor mounted ramp extending upward from the floor to an upper edge. A horizontal disk shaped recess flush as its outer edge with the upper edge of the ramp tapers downward to a center opening with a water drain extending downward from the opening. A manually operable water flush system cooperates with the drain.

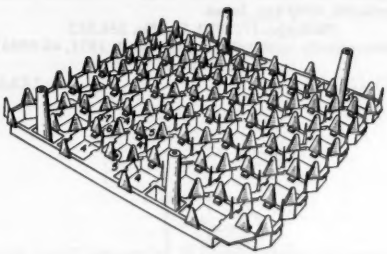
3,817,214
INCUBATORS FOR EGGS
Michel Bardet, Tours, France, assignor to Buckeye Stephens Limited, Gloucester, England
Filed Nov. 8, 1971, Ser. No. 196,463
Claims priority, application Great Britain, Nov. 10, 1970, 53461/70
Int. Cl. A01k *41/00*
U.S. Cl. 119—37 **9 Claims**



During the incubating of living eggs in a closed volume the desired conditions are maintained by pre-conditioning air in a

pre-conditioner outside the volume and feeding the pre-conditioned air into the volume in accordance with the conditions in the volume as sensed by an element within the volume, e.g. a wet-bulb thermometer. If the pre-conditioning of the air is carried out in a suitable manner, the metabolic products of the eggs can be substantially balanced by the air introduced into the volume, so that the desired environmental conditions are maintained in the volume.

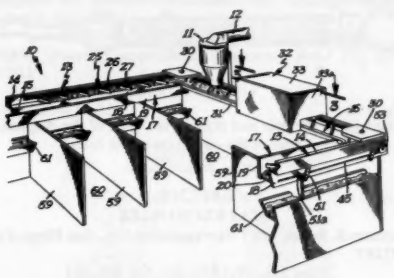
3,817,215
EGG INCUBATING TRAY WITH RACK AND CARRIER
Gerd Levin, 50 Lerchenstrasse 75, 2 Hamburg, Germany
Filed May 16, 1973, Ser. No. 360,846
Int. Cl. A01k *41/00*
U.S. Cl. 119—43 **12 Claims**



An egg incubating tray having egg cells arranged in a diagonal manner so that 48 cells are located on each tray. Each cell is surrounded by six upwardly disposed, tapered projections. These projections are positioned to hold the eggs and separate one egg from another and also to act as shock absorbers so that the eggs are less subject to breakage. There are also four smaller tab-like projections which are horizontally disposed and extend inwardly from the sides of each egg cell. Each of these projections has a smooth convexly cornered leading edge so that there are no sharp edges extending inwardly toward the egg. The carrier consists of a rectangular metal frame having a bottom made of a group of longitudinally disposed thin, wire-like members and including two cross braces which provide for the least amount of material to obstruct the free flow of gas throughout the trays. The rack on which the carrier is placed consists of a metal rack having an end which is shaped to accomodate the carrier of this invention and includes the normal end members bent over so that they do not interfere with the present carrier and the addition of an L-shaped extending member so as to properly hold the carrier in position.

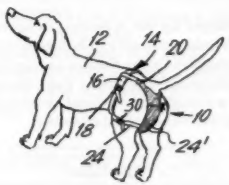
3,817,216
FEED DISTRIBUTING APPARATUS
Clarence Ruben Johanson, Box 232, Underwood, Minn.
Filed Jan. 12, 1973, Ser. No. 323,456
Int. Cl. A01k *05/02*
U.S. Cl. 119—52 AF **9 Claims**

A feed distribution apparatus comprises a plurality of shelves which receives particulate animal stock feeds such as silage from a hopper or the like. Metering troughs are positioned laterally adjacent the shelves and receive the feed material from the shelves. An endless conveyor having paddle elements moves the material along the shelves so that the metering troughs are progressively filled laterally from a point adjacent the hopper. Suitable doors which normally close the



bottom of the metering troughs may be selectively opened and closed to permit discharge of metered amounts of feed material into a plurality of animal feeding troughs.

3,817,217
SANITARY REFUSE RECEIVER AND HARNESS DEVICE (FOR USE ON SMALL ANIMALS)
Jozsef Hartmuth Matuka, and Margit Matuka, both of 35-55 73rd St., Jackson Heights, N.Y.
Filed May 21, 1973, Ser. No. 361,958
Int. Cl. A01k *23/00*
U.S. Cl. 119—95 **9 Claims**

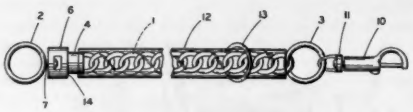


A sanitary refuse receiver and harness device for use on small animals, such as dogs, is disclosed. The solid waste refuse or excrements of the animal is received and contained therein, and map be disposed of in a sanitary manner. The sanitary waste receiver includes a disposable bag for containing the animal's waste materials and a harness, which is adapted to be removably affixed upon the haunches of an animal. The harness has a waist band and leg bands attached thereto, adapted to completely encircle respective parts of the animal. Extension straps are mounted on the waist and leg bands to facilitate positioning of the disposable bag. The disposable bag cooperates with and is removably affixed to the harness.

3,817,218
DOG CHOKE COLLAR
Carl G. Bongiovanni, 1717 Crystal Ln., Mount Prospect, Ill. 60056
Filed Jan. 18, 1973, Ser. No. 324,847
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **1 Claim**

In the improved dog choke collar, the chain is covered by a

tube of tough plastic or plastic-like material to avoid contact by the chain with the dog's neck and thus eliminate the cause



of damage to the hair and skin on the neck of the dog and, at the same time, improve the operation of the collar.

3,817,219

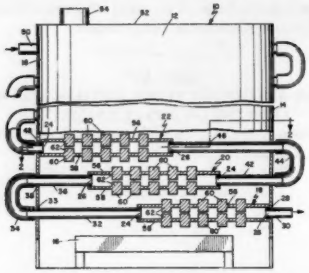
HEAT EXCHANGER

Theodore R. Sweet, 4617 Narragansette Ave., San Diego, Calif. 92107

Filed Jan. 12, 1973, Ser. No. 323,102

Int. Cl. F22b *37/12*

U.S. Cl. 122—260 **6 Claims**



A heat exchanger for use in heating or cooling water, air or other fluid, wherein a plurality of hollow nodulated chambers connected in staggered array defines a sealed fluid passageway within a compartment whereby a fluid flowing through the compartment is brought into thermal contact with a fluid flowing through the inter-connected chambers.

3,817,220

TWO-STAGE INTERNAL COMBUSTION ENGINE OF THE ROTARY-PISTON TYPE

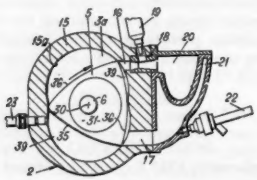
Karl Brumm, and Konrad Thaler, both of Russelsheim, Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1972, Ser. No. 317,392

Claims priority, application Germany, Jan. 4, 1972, 2002331

Int. Cl. F01n *3/12*; **F02b** *53/08*

U.S. Cl. 123—8.05 **2 Claims**



A two stage rotary-piston combustion engine of the Wankel type, having two rotary-piston units, acting respectively as a compressor unit and a prime mover unit, arranged side-by-side with the rotors mounted on a common shaft, and a combustion chamber, external to the two units, which is double-walled to provide a combustion space surrounded by a jacket. One transfer passage connects the exhaust of the compressor unit to the intake of the prime mover unit by way of the combustion chamber jacket, and a second transfer passage connects the exhaust of the prime mover unit to the intake of the compressor unit by way of the combustion space inside the jacket. The combustion chamber thus serves for afterburning of waste gases leaving the prime mover and for pre-heating of air induced by the compressor unit. By this means effective decontamination of the exhaust may be achieved.

3,817,221

DEVICE FOR DISPOSAL OF LIQUID OF CONDENSATION IN EXHAUST GASES

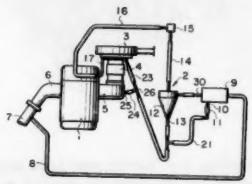
Hidetaka Nohira, and Kazuo Tomita, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Apr. 17, 1972, Ser. No. 244,552

Claims priority, application Japan, Oct. 1, 1971, 46-90041

Int. Cl. F02m *25/02*

U.S. Cl. 123—25 R **2 Claims**



This invention relates to a device for disposal of liquid of condensation in exhaust gases of an internal combustion engine prior to recirculation of a portion of the exhaust gases to the engine.

Said device comprises at least one trap mounted at a suitable position in an exhaust gas passageway for liquid for catching liquid formed by condensation of moisture in exhaust gases, and piping connecting said trap to a suction system of the internal combustion engine.

Said liquid is recirculated to a combustion chamber by the negative pressure of air drawn by suction into the combustion chamber.

3,817,222

ATMOSPHERIC POLLUTION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Estel G. Staib, Tulsa, Okla., assignor to Head & Johnson, P.A., Tulsa, Okla., a part interest

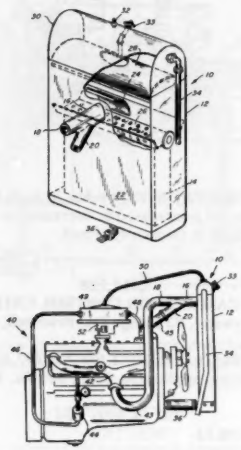
Filed Nov. 20, 1972, Ser. No. 307,878

Int. Cl. F02m *25/04*, *25/06*; **F01n** *3/04*

U.S. Cl. 123—25 F **4 Claims**

This invention comprises a combustion muffler and radiator, or heat exchanger, for an internal combustion engine. Engine exhaust emissions are joined with cooling liquids which flow through the engine block by means of a "Y" shaped fitting which directs the mixture of exhaust gases and cooling liquids through a mixing tube to splash against a diverter plate within the muffler on top of the radiator. The radiator and muffler are in one housing. The diverter plate directs the flow

of liquid downward. The exhaust gases, which have been intimately mixed with the liquid, flow upward through a series of perforated baffles. They vent through pipes attached to the dome at the top of the container, into the atmosphere. The



cooling liquids which may be a combination of water and glycol base antifreeze, for example, washes all solids and soluble gases out of the exhaust gases, so that the effluent gases are free of any pollution before they vent into the atmosphere.

3,817,223

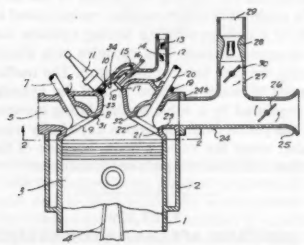
ANTI-AIR POLLUTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Joseph H. Doss, 27329 Wilson, Dearborn Heights, Mich. 48127

Continuation-in-part of Ser. No. 769,636, Oct. 22, 1968, abandoned. This application Oct. 21, 1970, Ser. No. 82,859

Int. Cl. F02b *17/00*

U.S. Cl. 123—32 SP **8 Claims**



The present internal combustion engine has a negative angle curvature shaped combustion chamber for each cylinder of the engine, each of which combustion chambers has a pair of intake valves, one valve being located at the vertex of the combustion chamber adjacent ignition means and a second intake valve at the base of the combustion chamber where an exhaust valve is also located, for supplying two gas-air fuel mixtures to the combustion chamber.

3,817,224

DEVICE FOR CONTINUOUSLY CONTROLLING A SPEED-DEPENDENT FACTOR

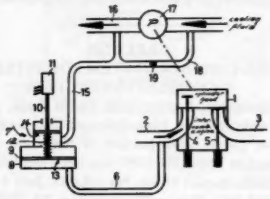
Heinz Pluequet, and Armin Reske, both of Cologne, Germany, assignors to Klockner-Humboldt-Deut Aktiengesellschaft, Cologne, Germany

Filed Feb. 15, 1972, Ser. No. 226,628

Claims priority, application Germany, Feb. 16, 1971, 2107211

Int. Cl. F01p *5/14*

U.S. Cl. 123—41.15 **11 Claims**



Method of and apparatus for continuously checking a speed-dependent factor, especially for use in connection with internal combustion engines, according to which the speed-dependent factor to be checked is continuously compared with a second speed-dependent factor having a characteristic similar to that of the speed-dependent factor to be checked. When the difference between the two speed-dependent factors exceeds a predetermined value, a differential measuring system gives off a warning signal or stops the operation of the circuits alltogether.

3,817,225

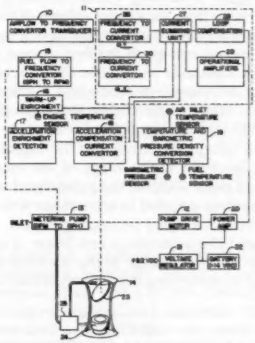
ELECTRONIC CARBURETION SYSTEM FOR LOW EXHAUST EMMISSIONS OF INTERNAL COMBUSTION ENGINES

Jack C. Priegel, Box 4029, El Paso, Tex. 79924

Filed Mar. 10, 1971, Ser. No. 122,933

Int. Cl. F02b *3/00*; **F02m** *39/00*

U.S. Cl. 123—32 EA **19 Claims**



An electronic fuel injection system for maintaining absolute control over the air to fuel ratio flowing to the combustion chambers of an internal combustion engine. The system includes means for measuring the air flow rate to the engine. The flow rate measurement is converted into a proportional electrical signal which flows to a signal summing unit.

The fuel flow rate from a fuel pump is controlled by a signal received from the signal summing unit, and provides a controlled fuel flow to the engine which is proportional to the air

flow. Means associated with the fuel pump measures the exact flow rate therefrom and converts the measurement into another proportional electrical signal which is fed back to the summing unit to thereby form a closed loop circuit. The summing unit compares the first signal with the second signal and changes the fuel flow rate the required amount to maintain the ratio thereof at a predetermined value.

There is optionally included within the system a warm-up enrichment, acceleration enrichment, and temperature and barometric pressure conversion means, all of which are connected back to the summing unit so as to provide extremely close control over all parameters affecting the air to fuel ratio.

3,817,226

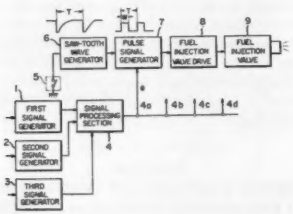
FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hisato Wakamatsu, Kariya, and Kunio Endo, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan. The portion of the term of this patent subsequent to Sept. 19, 1989 has been disclaimed.

Continuation-in-part of Ser. No. 54,681, July 14, 1970, Pat. No. 3,692,003. This application Aug. 29, 1972, Ser. No. 284,547

Int. Cl. F02m *51/06*

U.S. Cl. 123—32 EA **4 Claims**



A fuel control system for internal combustion engines comprising a first control signal generator to produce an output voltage corresponding to an operating parameter of the engine, and a signal processing circuit including a non-linear means for deriving from the output voltage of the first control signal generator a plurality of voltages having non-linear relation with the output voltage of the first control signal generator, which are adjustable to provide for a plurality of slopes corresponding to respective subdivided portions of the fuel demand characteristic of the engine, and an amplifier-adder to amplify and add together the derived voltages so as to produce a total output voltage conforming to the engine fuel demand characteristic over the entire range of the engine-operating parameter. The pulse width of the pulse signal to energize the fuel injection valves is varied in accordance with the total output voltage from the signal processing circuit. Thus, even if the fuel demand characteristic is non-linear, it may be closely followed over the entire range of the involved engine-operating parameter in controlling the amount of fuel supplied to the engine.

3,817,227

TWO-CYCLE INTERNAL COMBUSTION ENGINE

Shigeru Onishi, No. 31-13, Higashiyama, 3-chome, Kanazawa, Japan

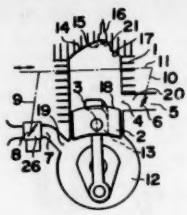
Filed Feb. 22, 1972, Ser. No. 232,325

Claims priority, application Japan, Feb. 25, 1971, 46-9703

Int. Cl. F02b *25/20*; **F02d** *9/04, 9/10*

U.S. Cl. 123—73 A **7 Claims**

A two-cycle internal combustion engine having an electric ignition system and characterized in that a suitably shaped recess is disposed inside the cylinder head, thereby forming a combustion chamber. A device for controlling the quantity of fuel supply and a device for controlling the flow of exhaust gas



are operated relatively to each other in such a way that the flow of exhaust gas is increased or decreased in response to increase or decrease in the supply of fuel.

3,817,228

CAM MOTION CONTROL UNIT

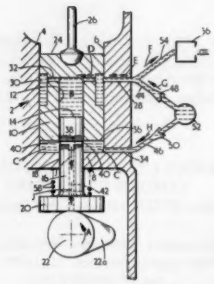
John Roger Bywater, 82 Bridge Ln., Bramhall, Stockport, England

Filed Oct. 12, 1972, Ser. No. 297,160

Claims priority, application Great Britain, Oct. 25, 1971, 49826/71

Int. Cl. F01l *1/24*

U.S. Cl. 123—90.12 **10 Claims**



A control unit for varying the length of the reciprocatory stroke of a pushrod or other member reciprocated in response to motion of a cam in which a sliding cylinder has a piston slidably mounted therein. The cylinder acts directly on the pushrod and the cam acts on the piston. The outflow of fluid from a space between a closed end of the cylinder and the piston is regulated by a valve so that lifting movement transmitted to the piston from the cam is not wholly transmitted to the cylinder, when the valve is open, because of the outflow, and therefore the lift of the push rod is reduced.

3,817,229

FUEL INJECTION APPARATUS FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES OPERATING ON FUEL CONTINUOUSLY INJECTED INTO THE SUCTION TUBE

Gerhard Stumpp, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed May 18, 1972, Ser. No. 254,367

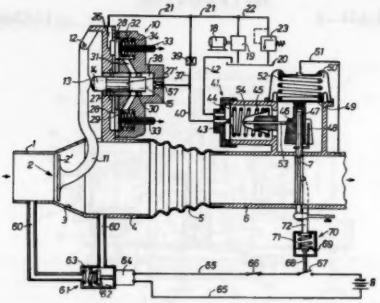
Claims priority, application Germany, May 18, 1971, 2124553

Int. Cl. F02d *9/06*

U.S. Cl. 123—97 B **4 Claims**

In order to effectively stop the fuel delivery by a fuel injection apparatus to a vehicle engine when the vehicle is coasting

in gear, means are provided which automatically open a bypass circumventing the air sensor (the deflection of which, as a function of the air flow effects the fuel delivery to the engine) in response to parameter magnitudes characterizing the operational condition of the engine when the vehicle is coasting in gear.

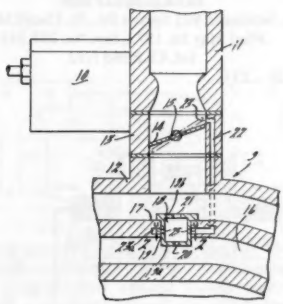


3,817,230

EXHAUST RECIRCULATION

Jorma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 21, 1972, Ser. No. 291,130
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **11 Claims**



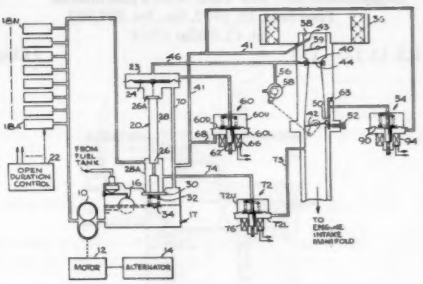
Automobile exhaust gases are recycled by means of a swirl chamber which receives these gases at a restricted opening in an upstream end located within the environment of the hot gases of the exhaust system. The chamber is in heat exchange relationship with the conventional intake manifold hot spot to facilitate heating of the latter. The chamber discharges the hot exhaust gases at a restricted opening in a downstream end in opposition to the inlet flow of the fuel-air mixture at a location directly below the throttle valve. A second restricted duct opens into the induction conduit upstream of the throttle valve to receive inlet gases during idle and discharges tangentially into the swirl chamber to effect a swirling gas motion therein to inhibit exhaust flow therethrough during engine idle operation. The downstream end of the chamber comprises a thin plate adapted to flex with changing operating temperatures to dislodge exhaust gas contaminants from adjacent its opening.

3,817,231

FUEL INJECTION AND CONTROL SYSTEM

Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Continuation of Ser. No. 858,717, Sept. 17, 1969, abandoned. This application June 21, 1971, Ser. No. 155,220
Int. Cl. F02m *51/00*
U.S. Cl. 123—119 R **19 Claims**



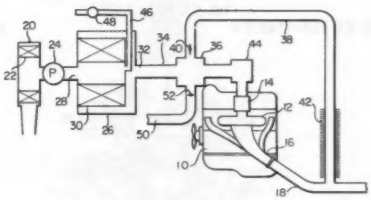
A mass flow timed fuel injection system is provided wherein fuel flow is maintained at all times in a predetermined relation to air mass flow actually entering the engine at any instant, and the fuel injection valve open time is maintained in inverse proportion to speed or, is open for a constant crank angle.

3,817,232

METHOD AND APPARATUS FOR REDUCING TOXIC COMPOUNDS IN EXHAUST GASES FROM COMBUSTION TYPE POWER PLANT

Yasuo Nakajima; Toru Yoshimura, and Shin-Ichi Nagumo, all of Yokosuka, Japan, assignors to Nisson Motor Company, Limited, Yokohama City, Japan

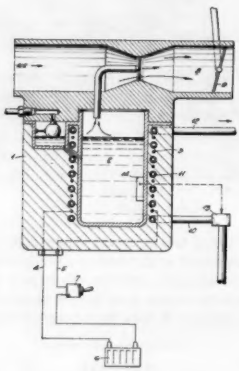
Filed June 20, 1972, Ser. No. 264,576
Claims priority, application Japan, Nov. 25, 1971, 46-94073; Nov. 22, 1971, 46-93013
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **11 Claims**



Herein disclosed are a method of and apparatus for reducing toxic compounds especially nitrogen oxides in exhaust gases from various power plants of the combustion type, such as the automotive engines and industrial boilers. In the method herein disclosed, the fuel for the power plant is mixed with denitrified air and recirculated exhaust gases and, where desired, with additional fresh air. The denitrified air is obtained by separation of nitrogen molecules from atmospheric air by the use of nitrogen separating means using, for example, a nitrogen impermeable membrane or a certain type of molecular sieve which may be formed of pulverized zeolite. Deterioration of the nitrogen separating ability of the separating means as a result of deposit or accumulation of the nitrogen molecules thereon is cyclically remedied through periodic purging of the nitrogen separating means. The nitrogen oxides in the exhaust gases are reduced about 95 per

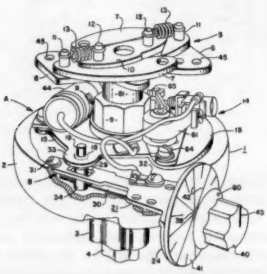
cent and the hydrocarbons, carbon monoxides and sulfides are reduced about two thirds as compared with the conventional combustion systems.

3,817,233
VAPOR FUEL CARBURETION SYSTEM
Harold E. Kihn, Pacific, Wash., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Sept. 18, 1972, Ser. No. 289,802
Int. Cl. F02m 17/18
U.S. Cl. 123—133 3 Claims



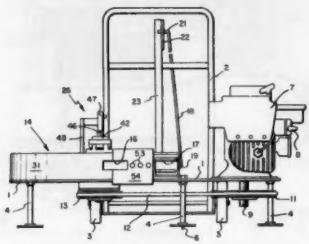
A vapor fuel carburetion system for an internal combustion engine comprises a vaporizing device for vaporizing the fuel in the fuel reservoir of the engine. A directing system directs air and vaporized fuel to the compression chamber.

3,817,234
ADJUSTABLE DISTRIBUTOR
Thomas A. Jirousek, Cleveland, Ohio, assignor to Develco Manufacturing Company, Lakewood, Ohio
Filed Mar. 14, 1973, Ser. No. 341,237
Int. Cl. F02p 5/00
U.S. Cl. 123—146.5 A 6 Claims



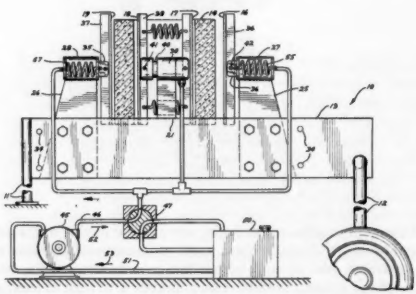
A conventional distributor for an internal combustion engine is modified for automobile racing purposes by removing the vacuum spark advance unit and replacing it with an inexpensive manually adjustable unit having an identical mounting bracket, a horizontal adjusting screw mounted for rotation on said bracket and having an adjustable vertical pin mounted thereon, said screw being turned by a knob having means for indicating the amount of angular adjustment of the breaker plate.

3,817,235
HOCKEY PUCK PROJECTOR
Laurence Stephen Blake, West Peabody, Mass., assignor to Hockey-Mate International, Inc., Arlington, Mass.
Filed June 4, 1973, Ser. No. 366,350
Int. Cl. F41b 3/04
U.S. Cl. 124—6 12 Claims



In practice apparatus for shooting hockey pucks the puck rides on the lower of two continuously rotating coaxial disks, whose speeds are controlled, and which are held spaced apart by a spring. Rotation of the puck with the lower disk is restrained by a spring closed gate. When the disks are pressed together they grip the puck there-between, accelerate it, during which time the puck is deflected away from the drip of the disks and impelled through an exit chute which is angularly adjusted to direct the puck.

3,817,236
BLOCK SPLITTER
Thomas L. Schlough, 921 Spruce Dr., St. Cloud, Minn. 56301
Filed May 26, 1972, Ser. No. 257,241
Int. Cl. B28d 1/32
U.S. Cl. 125—23 C 9 Claims

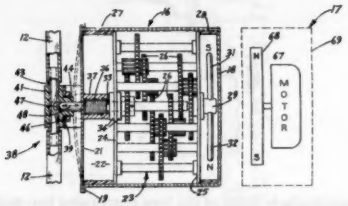


A block splitter having a work supporting surface, with block splitting blades arranged in operative relationship thereon. The blades include a plurality of relatively movable, spaced cutting blades disposed in aligned relationship in a splitting plane, with at least one of the cutting blades being mounted along the work supporting surface in anchored relationship thereto. The remaining blades have forced-applying means coupled thereto for the application of a splitting force through the web of a block disposed on the work supporting surface.

3,817,237
REGULATORY APPARATUS

Lee R. Bolduc, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 24, 1972, Ser. No. 283,274
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 10 Claims

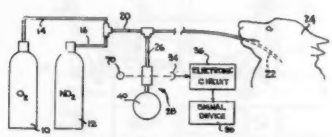


A regulatory apparatus for controlling the movement of fluids, cells and energy in conveying structure, as spermatazoa in the ductus deferens or signals in nerve fibers. The regulatory apparatus has a stepped down gear train driven in response to a remote magnetic field to selectively expand and contract a flexible member. A valving device connected to the flexible member is operable to selectively open and close a passageway coupled to the conveying structure in response to the expansion and contraction of the flexible member.

3,817,238
BREATHING SENSOR

Louis R. Matson, 2961 25th St., Sacramento, Calif. 95818

Continuation-in-part of Ser. No. 290,340, Sept. 19, 1972, abandoned. This application Oct. 4, 1973, Ser. No. 403,678
Int. Cl. A61b *5/08*
U.S. Cl. 128—2 R 10 Claims



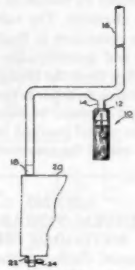
A breathing sensor, adapted to be attached to a conduit between a source of breathing gas and an animal, said sensor comprising a substantially vertical conduit having a float therein which is movable in response to breathing of the animal, a sensor for detecting the motion of the float and for actuating, preferably, an audio signal.

3,817,239
URINE MONITOR

David H. Kuntz, 6027 Halm St., Los Angeles, Calif. 90034

Filed May 12, 1972, Ser. No. 252,629
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F 15 Claims

An improved monitor for use in a catheterizing tube system has a hollow closed chamber, preferably resilient, containing test viewing means, for example, a transparent portion of the chamber, and urine testing means disposed within the chamber. The urine testing means includes a test medium which is visually responsive to a preselected urine factor to be tested. Urine transferring means, such as a needle, communicate between the chamber interior and the exterior. Catheter attaching means may be provided for releasably connecting the monitor to a urine catheter drainage system. The catheter attaching means may include a flexible shield extending forward from the front end of the chamber for releasably engaging the outer surface of one arm of the catheter Y tube. The device is constructed so as to protect the attaching element from damage and inhibit inadvertent contact therewith. The monitor is disposable and therefore permits replacement

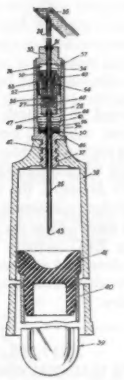


for repeated monitoring of urine as it passes through the catheter. Multiple compartments may be provided in the monitor chamber for simultaneous testing of the urine for one or a plurality of urine factors. In addition, the device may readily be used for sampling urine without in situ testing, if desired.

3,817,240
MULTIPLE SAMPLE NEEDLE ASSEMBLY WITH ONE-WAY VALVE AND BLOOD FLOW INDICATOR

Waldemar A. Ayres, Rutherford, N.J., assignor to Becton Dickinson and Company, East Rutherford, N.J.

Filed June 28, 1972, Ser. No. 266,996
Int. Cl. A61b *5/14*
U.S. Cl. 128—2 F 23 Claims



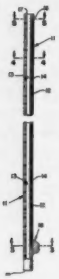
A needle assembly for facilitating the collection of a blood sample from a patient into an evacuated collection container and indicating when a venipuncture has been accomplished and preventing flow of fluid from the collection container into the patient during and after collection of the blood sample. The assembly includes a housing having a chamber therein, a forward penetrating end including a cannula extending from the housing for penetration into the blood vessel of a patient, and a rearward end including a cannula extending from the housing and adapted to be coupled in fluid communication with the interior of an evacuated collection container. Surfaces of the assembly form a passageway for directing blood

from the blood vessel through the housing to the collection container when the forward end is in the blood vessel and the rearward end is in the container. A valve assembly is mounted in the chamber in the housing and normally is in the unarmed position with passages therein to permit blood to flow from the vein into the chamber upon venipuncture. The assembly is shiftable to an armed position to close the passageway from the vein into the chamber by means of a resilient elastomeric valve member in the chamber. The valve member is adapted to be responsive to a reduction in fluid pressure at the rearward end to deform and automatically open the passageway and permit blood to flow from the blood vessel to the rearward end. Thereafter, the valve member is responsive to a predetermined increase in fluid pressure at the rearward end to automatically return to the closed position to thereby prevent flow of fluid from the rear end of the assembly to the blood vessel.

3,817,241
DISPOSABLE CENTRAL VENOUS CATHETER AND METHOD OF USE

Henry Grausz, Larkspur, Calif., assignor to Henry and Carol Grausz, as trustees for Michael and Bradly Grausz and Edgar Braun, part interest to each

Filed Feb. 16, 1972, Ser. No. 226,835
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **8 Claims**



A catheter composed of a length of flexible tubing composed of nonreactive material permitting protracted intravenous placement during periods of intensive care for intravenous feeding and administration of drugs and for monitoring central venous pressure, the catheter being provided with an electrical conductor extending lengthwise of the tubing and providing an electrode at the distal end positioned for sensing intrathoracic EKG activity unaffected by material discharged from the distal end and additionally providing such intrathoracic EKG activity simultaneously with the monitoring of intravenous pressure.

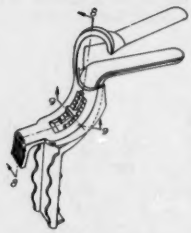
3,817,242
INSTRUMENT FOR MAINTAINING BODY CAVITIES IN EXTENDED CONDITION

Goran O. Uddenberg, Barrsbogsgatan 5, S-412 74 Gothenburg, Sweden

Continuation-in-part of Ser. No. 77,533, Oct. 2, 1970, abandoned. This application June 26, 1972, Ser. No. 266,383
Int. Cl. A61b *1/32*
U.S. Cl. 128—20 **5 Claims**

An expandable instrument for maintaining body cavities in an extended condition such as a speculum for vaginal inspection and having a pair of speculum jaws slideably connected at one end for movement along a curved path towards and away from one another whereby the free ends of said jaws open up quicker than their connected ends upon imparting a relative sliding movement to said jaws.

The present invention relates to an instrument for maintaining body cavities in extended condition, said instrument preferably to be used as a speculum for vaginal inspection, and

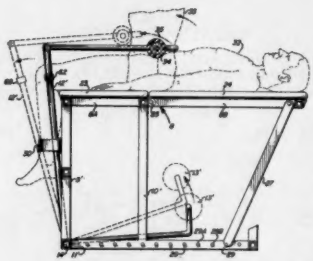


more particularly being of the type comprising two main parts, which can be detachably connected to each other, each part forming a jaw in the assembly, it being possible to move the jaws of the instrument towards and away from each other.

3,817,243
EXERCISING APPARATUS

Walter E. Perrine, 3001 N. 55th Dr., Phoenix, Ariz. 85008

Filed Apr. 16, 1973, Ser. No. 351,568
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **11 Claims**



An exercising apparatus for removing excess weight in the area of the abdomen of a user and for building the abdominal muscles wherein a roller exerts pressure against the abdomen and provides a massaging action as the user of the apparatus performs sitting-up exercises.

3,817,244
KNEE BRACE

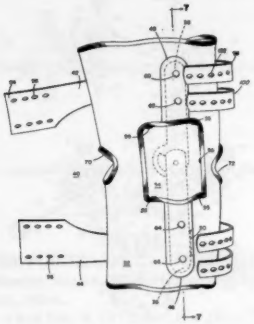
Glenn N. Taylor, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Mar. 3, 1972, Ser. No. 231,628
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 C **3 Claims**

A knee brace for support and protection of a knee joint comprises inner and outer bracing structures, each comprising two substantially rigid generally planar and elongated arms. Upper securing means secures one arm of each bracing structure parallel to the wearer's upper leg above the knee for movement with the upper leg and limited motion parallel to the upper leg, and lower securing means secures the other arm of each bracing structure parallel to the wearer's lower leg below the knee for movement with the lower leg and limited motion parallel to the lower leg.

Each bracing structure has a first arm bifurcated to provide two generally parallel plate portions; the second arm has an

end portion received between the plate portions for articular motion of the second arm relative to the first arm within a plane parallel to the planes of the plate portions; the plate portions prevent motion of the second arm out of the plane. The articular motion is determined by the normal flexion and extension of the wearer's knee and comprises any combination consistent therewith of rotation of the second arm about any axis through the first arm bifurcated end and the second end portion and normal to the plane, and translation of the second arm as a whole with respect to the first arm in any direction within the plane.



3,817,245

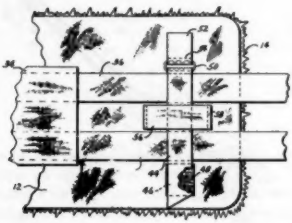
REMOVABLE CUSHION FOR RESTRAINING DEVICES

Mildred M. Kroeger, 1401 N. Los Robles, Pasadena, Calif. 91104

Continuation-in-part of Ser. No. 152,225, June 11, 1971, abandoned. This application Apr. 7, 1972, Ser. No. 242,098

Int. Cl. A61f *5/37*; **A61g** *7/06*

U.S. Cl. 128—134 **3 Claims**



A device for reducing the surface pressure on a patient's body caused by a restraining belt includes a cushion having a front side with a compressible thickness disposed against the patient's body. Fastening means on the back side of the cushion hold the cushion in a fixed position against the patient's body, and thereby protect the patient from contact with the belt. In one form of the invention, the fastening means includes an elongated flexible and movable flap which fits around the restraining belt, and securing means, preferably cooperating elongated "Velcro" strips, for releasably fastening the free end of the flap to the back side of the cushion. The flap, in its fastened position, forms a tunnel around the restraining belt to hold the cushion against a patient's body. In another form of the invention, the fastening means includes a pair of longitudinally spaced apart straps on opposite sides of the cushion, and respective loops aligned longitudinally with the straps. The straps extend over the ends of the restraining belt, through their respective loops, and are folded back on themselves to be secured to the back side of the cushion.

3,817,246

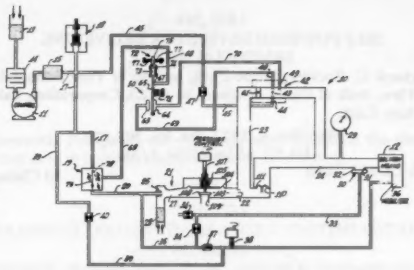
FLOW RESPONSIVE RESPIRATION APPARATUS

James Weigl, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

Filed Dec. 11, 1972, Ser. No. 313,983

Int. Cl. A61m *16/00*

U.S. Cl. 128—145.8 **13 Claims**



Respiration apparatus for IPPB therapy in which the inspiratory effort of the patient to initiate an inspiration phase is sensed by a flow sensor which operates by directing a laminar jet of gas across a conduit of the apparatus toward a receiver, to produce a normal pressure in the receiver when there is no flow in the conduit. A second receiver establishes a reference pressure, and the change in the pressure relationship between the receivers, resulting when the patient creates a cross-flow across the jet, is used as a pilot signal to operate an actuator for opening a flow control valve. Similarly, as the flow rate is reduced near the end of the inspiration phase, the pressure relationship is restored and the actuator closes the control valve. One embodiment uses a laminar jet that is directed into an aligned receiver to raise the pressure therein relative to a receiver spaced from the jet, and referenced to actual patient delivery pressure, until a cross-flow disturbance changes the jet to turbulent, thereby reducing the pressure in the aligned receiver. Another embodiment uses a turbulent jet directed between two longitudinally spaced receivers, disposed in close proximity to one another, to establish equal pressures therein until the jet is deflected longitudinally toward one of the receivers and away from the other in response to a cross-flow.

3,817,247

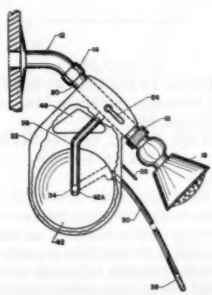
PORTABLE DOUCHING DEVICE

Marjorie L. Mills, 5-B Venetian Way, Indian Harbor Beach, Fla. 32937

Filed Nov. 20, 1972, Ser. No. 307,811

Int. Cl. A61m *3/00*

U.S. Cl. 128—229 **4 Claims**



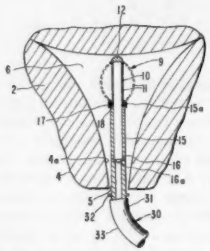
A portable douching device attachable to a standard shower fixture having a flexible water supply tube easily reeled in and

out of a removeably mounted storage housing. Water flow to the device is adjustable as to temperature and pressure with standard shower valves. A chemical dispenser is coupled in the douche water supply line and is positioned for easy access by the user.

3,817,248
SELF POWERED DEVICE FOR DELIVERING BENEFICIAL AGENT

Richard G. Buckles, Menlo Park, and Su Il Yum, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Nov. 6, 1972, Ser. No. 303,773
Int. Cl. A61m *25/00, 31/00*
U.S. Cl. 128—260 **13 Claims**



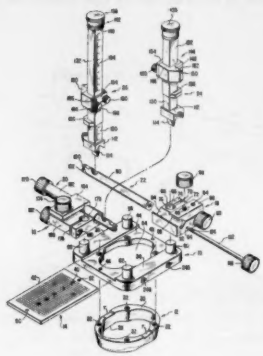
A self powered device for the continuous and controlled delivery of an agent over a prolonged period of time to an agent receptor is disclosed. The device is comprised of a pressure distendable receptacle formed of an elastic material, with the receptacle communicating with a discharge port having a flow resistive agent metering means for releasing agent in fluid form. The receptacle has an entry port providing access to its interior with the port having a sealing means. The receptacle is dimensioned for insertion in its collapsed state into a receptor site and it is expandably responsive to an applied pressure induced by forced infusion of agent through the port after the receptacle is in the receptor. The infusion of agent establishes an internal stress in the elastic material with the material maintaining as a result of the stress a substantially constant internal pressure in the receptacle throughout the discharge of the agent from the receptacle. The receptacle is adapted for easy removal from the agent receptor after the administration of agent.

3,817,249
STEREOTAXIC INSTRUMENT

Michael Kennedy Nicholson, Bethesda, Md., assignor to Neuro Probe, Inc., Bethesda, Md.

Filed Apr. 7, 1972, Ser. No. 242,006
Int. Cl. A61b *19/00*
U.S. Cl. 128—303 B **5 Claims**

A chronically fixed stereotaxic device for intracerebral exploration with electrodes or other probes. A headpiece or platform is provided which features an enlarged opening providing direct access to the dura or skull of the research animal. A removable gridplate is located in covering relation to the opening and one or more swivel blocks mounting electrode drives is supported on the headpiece so that electrodes may be properly positioned with the gridplate in place whereafter the gridplate is removed and the electrode or electrodes are plunged and adjusted to the desired Horsely-Clarke coordinate positions. A swivel block and electrode drive assembly is also disclosed which allows an electrode to be

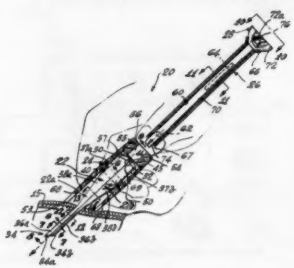


plunged at an acute angle to the vertical Horsely-Clarke axis to allow an electrode angularly to reach a desired Horsely-Clarke coordinate position.

3,817,250
INSTRUMENT FOR PERFORMING A TRACHEOSTOMY AND OTHER SURGICAL PROCEDURES

Sol Weiss, Encino, and David T. Kline, Sherman Oaks, both of Calif., assignors to International Medical Devices, Inc., Beverly Hills, Calif.

Filed Oct. 24, 1972, Ser. No. 299,941
Int. Cl. A61b *17/32, 17/34*
U.S. Cl. 128—305 **16 Claims**



The surgical device herein set forth is adapted for use in emergency tracheostomy procedures, as well as other procedures wherein rapid penetration for aspiration, ventilation and visualization is desired. The device carries an improved split needle, which needle expands under the influence of an airway tube in a more reliable and reproducible fashion than before. The device carries a positive means for limiting penetration into the skin, as well as having means for clearing obstructions in the airway tube.

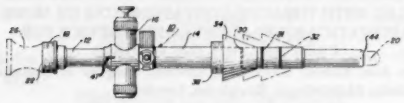
3,817,251
LAPAROSCOPE CANNULA

Harrith M. Hasson, 6942 N. Waukesha Ave., Chicago, Ill. 60646

Filed Oct. 4, 1972, Ser. No. 298,765
Int. Cl. A61m *25/00*
U.S. Cl. 128—348 **5 Claims**

A cannula is provided for laparoscopy, which cannula includes an adjustable cone-shaped sleeve for blocking the inci-

sional gap and maintaining the pneumoperitoneum. The cannula also includes a pair of hooks for receiving a suture to



maintain the cannula in place with respect to the patient's abdomen.

3,817,252

ELECTRODE FOR TRANSCUTANEOUS STIMULATION

Donald D. Maurer, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 8, 1972, Ser. No. 251,179
Int. Cl. A61n *1/18*
U.S. Cl. 128—416 **13 Claims**

An electrode for transcutaneous stimulation capable of operating within an optimum power density range. The electrode is provided with a current diffusing screen which maintains a physiologically acceptable power density by increasing the effective stimulation surface area. In addition, a second screen is employed to increase the surface area of the input electrical connection to inhibit electrolysis as well as to lower the overall electrode impedance. The entire electrode structure is flexible so that it is easily conformable to any surface of the body.

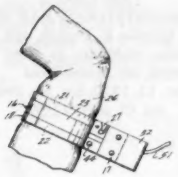
3,817,253

PASSIVE ELECTRODE AND CLAMP THEREFOR

Donald I. Gonser, Forest Park, Ohio, assignor to Dentsply International Inc., York, Pa.

Filed Nov. 28, 1972, Ser. No. 310,175
Int. Cl. A61n *1/04*
U.S. Cl. 128—418 **8 Claims**

A passive electrode strip and clamp combination. The electrode includes an elongated metal foil body and reinforcing strips attached to one face of the body and extending lengthwise thereof. A portion of the body is exposed adjacent the reinforcing strips. The opposite face of the body is exposed. The clamp includes clamping arms which are urged together. Portions of the clamping arms engage the exposed portion of the strip carrying face in electrical contact relation



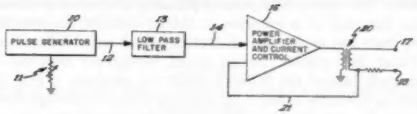
therewith. Prongs on the clamping arms perforate the electrode strip to hold the clamp on the electrode strip.

3,817,254

TRANSCUTANEOUS STIMULATOR AND STIMULATION METHOD

Donald D. Maurer, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 8, 1972, Ser. No. 251,280
Int. Cl. A61n *1/36*
U.S. Cl. 128—421 **8 Claims**



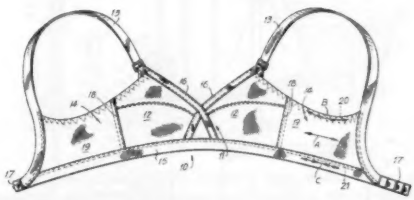
A transcutaneous stimulator for stimulating portions of the body. The output of the stimulator is a stimulating pulse having frequency components falling within predetermined frequency band limits so as to optimally excite touch nerve fibres relative to nociceptor or pain receptor nerve fibres.

3,817,255

BRASSIERE WITH YIELDABLE SIDE PANEL CONSTRUCTION

Jack J. Lo Cascio, Bayonne, N.J., assignor to Rapid American Corporation, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,405
Int. Cl. A41c *3/00*
U.S. Cl. 128—498 **12 Claims**



The present invention relates to the application of yieldable fabrics to the side or dorsal panels of brassieres to provide many of the advantages of elastic materials without the need for major elastic components. The present invention teaches the selective orientation of such yieldable fabrics in such side or dorsal panels in a manner which positions the yieldable characteristics relative to those areas of the brassiere where selective strain relief acts to deter undesirable distortion and

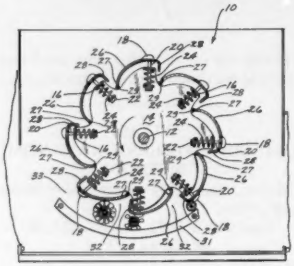
further provides sufficient retentive qualities to reproportion selective flesh areas of the body.

3,817,256

SPRING-MOUNTED RASP BAR SHELLER

Wesley F. Buchele; Ignatius K. Peprah, and Ali R. Mahmoud, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Oct. 12, 1972, Ser. No. 296,972
Int. Cl. A01f *12/20*
U.S. Cl. 130—6 **7 Claims**



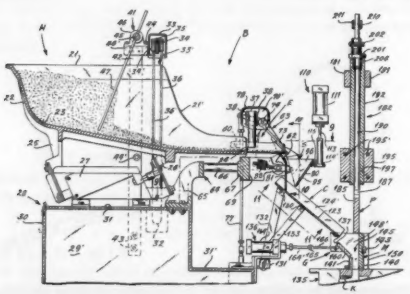
A spring-mounted rasp bar sheller for corn is described herein. The sheller comprises a plurality of spaced apart rasp bars mounted on a combine or sheller cylinder. Each of the rasp bars has studs secured thereto which extend therefrom through the cylinder backing plates. Springs are mounted on the studs behind the backing plates for yieldably urging the rasp bar inwardly towards the backing plate. Centrifugal force causes the rasp bar to move out radially towards the concave as the cylinder is rotated. During shelling, impact forces on the rasp bars deflect them radially inwardly. Filler plates are also disclosed for preventing the corn from becoming lodged between the backing plate and the rasp bars.

3,817,257

SHORT FILLER CIGAR MACHINE

Frank D. Andriola, Dunmore, and Frank A. Suraci, Jr., Forest City, both of Pa., assignors to Parodi Cigar Corporation, Scranton, Pa.

Filed July 7, 1972, Ser. No. 269,754
Int. Cl. A24c *1/02*
U.S. Cl. 131—22 A **12 Claims**



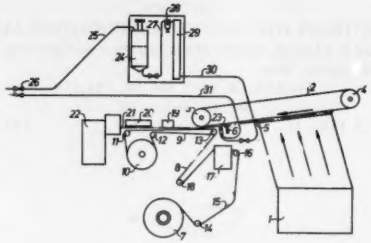
A novel short filler bunch forming apparatus for a cigar machine in which short filler material from a hopper reservoir is spread laterally and longitudinally over a hopper extension and intermittently discharged therefrom into a weighing scale from which it is discharged upon demand through a delivery chute to a bunch forming magazine for subsequent compaction and transfer for conventional finishing into a cigar, and positive control means for maintaining an even flow pattern of short filler material through each stage of its movement.

3,817,258

METHOD OF PRODUCING CIGARETTES OR THE LIKE FILLED WITH TOBACCO CONTAINING ONE OR MORE AROMATIC LIQUID AGENTS, AND A DEVICE FOR CARRYING OUT THE METHOD

Sture Axel Ernow, Stockholm, Sweden, assignor to Svenska Tobaks Aktiebolaget, Stockholm, Sweden

Filed Oct. 25, 1972, Ser. No. 300,608
Claims priority, application Sweden, Nov. 11, 1971, 14449/71
Int. Cl. A24b *3/12*
U.S. Cl. 131—31 **2 Claims**



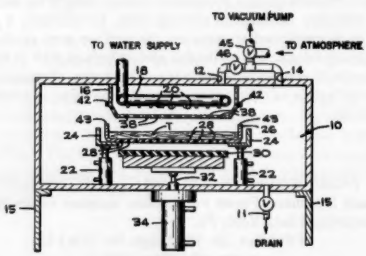
Apparatus is disclosed for producing cigarettes having a tobacco filler containing one or more aromatic substances. The aromatic substances are dissolved or dispersed in a liquid and sprayed onto the tobacco filler immediately prior to its being formed into a rod and wrapped with paper to minimize evaporation from the tobacco. The spray is controlled so as to minimize ambient air contamination.

3,817,259

METHOD OF AND APPARATUS FOR TURGOR CONDITIONING TOBACCO

Jurgen H. Strasser, Sunnyvale; Philip Wood, Monte Sereno; Edward N. Berticevich, San Jose, and Charles M. Buchzik, Los Gatos, all of Calif., assignors to FMC Corporation, San Jose, Calif.

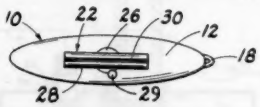
Filed Nov. 12, 1971, Ser. No. 198,185
Int. Cl. A24b *03/18*
U.S. Cl. 131—140 P **22 Claims**



A method of turgor conditioning tobacco that includes the steps of placing the tobacco in an enclosed chamber, saturating the tobacco with water, and evacuating the chamber until the water reaches its vapor point at which point the water vapor backs up against an overlying gas impervious hood and drives the excess water through drainage openings away from

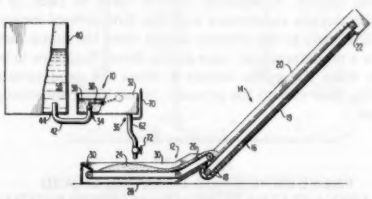
the tobacco. The water that is drained from the tobacco contains a portion of the water soluble sugars and nicotine from the tobacco and can be used to impregnate nicotine-free filler material that is later mixed with the tobacco in conventional cigarette production.

3,817,260
ORNAMENTAL BARRETTE
Shirley J. Hanford Kleine, 8877 Weller Rd., Tulsa, Okla. 45242
Filed Nov. 10, 1972, Ser. No. 305,592
Int. Cl. A45d 8/24
U.S. Cl. 132—48 2 Claims



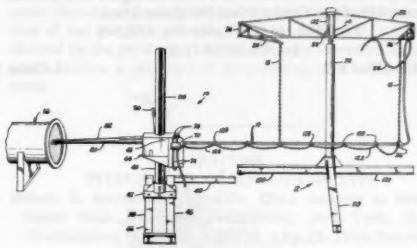
A barrette or hair clasp comprising a base or hair clasping portion having means provided thereon for receiving and securely retaining an ornamental broach, or similar piece of jewelry, thereon whereby the broach may be worn as a decorative item for milady's hair.

3,817,261
GRAIN MOISTURIZER
Lawrence H. Rogge, Johnson, Nebr.
Filed May 9, 1972, Ser. No. 251,694
Int. Cl. B02b 1/04
U.S. Cl. 134—56 R 8 Claims



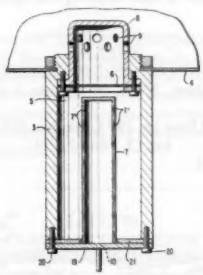
A portable device is described for adding water at a predetermined rate to the hopper of a conventional, portable grain auger or elevator whereby the moisture content of the grain is increased by a desired amount as the grain is moved from storage to a predetermined location. In one embodiment a gravity feed is described whereby water from a tank flows from an outlet therein into the hopper. The water level in the tank is maintained constant by a float valve at the tank inlet controlling ingress therethrough from a source of water under pressure, the flow rate being determined by the area of a fluid passage in a flow controller positioned in the outlet. In an alternative embodiment a variable speed, motor-driven pump is utilized to supply water from the water source at a constant rate to the hopper, the rate of flow being determined by the speed of the motor. In both embodiments the magnitude of the increase in moisture is determined by the rate of flow of water into the hopper which in turn is proportional to the capacity of the grain elevator or auger used to convey the grain from the hopper.

3,817,262
TUBE CLEANING DEVICE
Robert R. Caradeur, Sulphur; John E. Cardone, Lake Charles, both of La., and Ernest E. Broussard, Houston, Tex., assignors to Cesco, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 116,121, Feb. 17, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,565
Int. Cl. B08b 3/02, 9/02
U.S. Cl. 134—167 C 16 Claims



A tube cleaning device including a water lance and a movable carriage with a driving mechanism for extending and retracting the lance, lance guides and conduit supplying water under pressure to the lance; the driving mechanism being located close to the lance tip when the lance is in its retracted position.

3,817,263
DEVICE FOR THE INFLATION OF SAFETY CUSHIONS IN VEHICLES
Hellmut Bendler, Erlangen-Spardorf; Heinz Gawlick, Furth, and Gunther Marondel, Erlangen, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany
Continuation-in-part of Ser. No. 95,718, Dec. 7, 1970. This application Apr. 2, 1973, Ser. No. 346,806
Claims priority, application Germany, Dec. 6, 1969, 1961308
Int. Cl. F16k 13/04
U.S. Cl. 137—68 35 Claims



Device for inflating safety cushions in a vehicle having an electrically ignitable cartridge provided with a pyrotechnical mixture free of brisant or high explosive within a cartridge casing of low strength material. The cartridge casing material is of a low strength so as to prevent the cartridge casing acting as a tamp for accommodating inadvertent detonation of the cartridge by itself. The cartridge is arranged within a pressure tank equipped with a liquid gas in communication with the interior of a safety cushion by means of an extension having at least one gas passage aperture, which extension is sealed with respect to the liquid gas by a bursting or rupturing diaphragm.

The pressure tank includes a cartridge housing for removably accommodating the cartridge. The walls of the cartridge housing are of a high strength material and are so dimensioned with respect to the cartridge casing that the cartridge housing serves as a tamp for facilitating optimum detonation of the high explosive free pyrotechnical mixture.

3,817,264

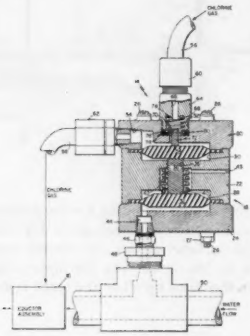
VALVE

Enrique L. Kilayko, Auburndale, Mass., assignor to Precision Control Products Corporation, Waltham, Mass.

Filed Feb. 14, 1973, Ser. No. 332,346

Int. Cl. G05d *11/03*

U.S. Cl. 137—111 **1 Claim**



A valve for passing a first fluid in response to the pressure of a second fluid comprising a body having first fluid inlet and outlet ports connected by an internal fluid passage, a second fluid inlet port, and first and second internal chambers; a first flexible diaphragm mounted on the body and dividing the first chamber into separate first and second portions, the former portion communicating with the second fluid inlet port; a second flexible diaphragm mounted in the second chamber; a movable rigid connector extending between the diaphragms; and passage sealing means in the internal fluid passage including structure disposed to engage the second diaphragm, whereby movement of that diaphragm is operative to seal the passage.

3,817,265

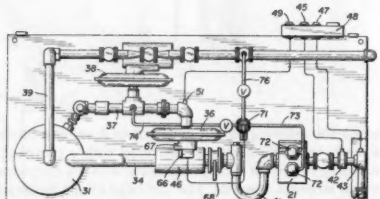
ANTI-POLLUTION COMPRESSOR CONTROL SYSTEM

Theodore C. Ambler, 275 S. Minnesota Ave., Casper, Wyo. 82601

Filed June 16, 1972, Ser. No. 263,583

Int. Cl. F04b *23/00*

U.S. Cl. 137—115 **5 Claims**



An anti-pollution control for compressors used in gas recovery operations. An electrical circuit responsive to changes in gas pressure operates a selector valve to return gases that might otherwise be expelled to the atmosphere from the unloaders of compressors to the gas recovery system storage tanks or lines. For continuously operating rotary compressors similar control components alternately establish a no-load bypass for system lines that avoids atmospheric exposure.

3,817,266

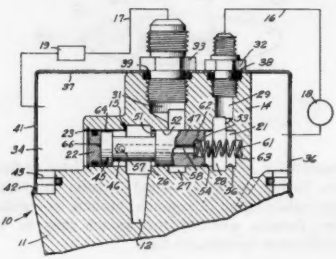
HYDRAULIC SYSTEM WITH FLOW CONTROL MEANS TO CONTROL PRESSURE DISTRIBUTION BETWEEN A PRIMARY AND A SECONDARY HYDRAULIC CIRCUIT

Richard Warren Dymond, Rochester, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Mar. 20, 1972, Ser. No. 236,422

Int. Cl. F16k *11/07*

U.S. Cl. 137—116 **5 Claims**



A hydraulic system for supplying a primary and a secondary hydraulic circuit, the system having a pump and means forming an orifice through which fluid at the pump pressure is directed. A flow control means is provided in fluid communication with the pump, the flow control means including a slidable valve means which is responsive to changes in the pressure drop across the orifice and has porting means to control the distribution of fluid to the primary and secondary hydraulic circuit. A separate control valve in each of the hydraulic circuits cooperates with the flow control means to direct fluid only to the primary circuit when the pump output is below a predetermined value and to direct fluid flow in both circuits when the pump output is above the predetermined value, the flow rate to the primary circuit being substantially constant.

3,817,267

VALVE DEVICE FOR DRAINING LIQUID CONTAMINANT COLLECTED FROM COMPRESSED GAS

William Robert George Hicks, Stratford-upon-Avon; Richard John Leslie Newman; Leslie William Smith, both of Shipston-on-Stour, and Michael John Wates, Pershore, all of England, assignors to C. A. Norgren Co., Littleton, Colo.

Filed Sept. 29, 1972, Ser. No. 293,558

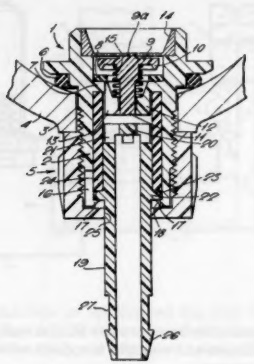
Claims priority, application Great Britain, Sept. 30, 1971, 45589/71

Int. Cl. F16t *1/00*

U.S. Cl. 137—204 **8 Claims**

A drain valve device is provided adapted for draining liquid contaminant such as oil and/or water, collected from compressed air or other gas. The valve is closable by the gas pressure and loaded to open when the pressure sufficiently falls to permit the discharge of collected contaminant. The device incorporates a captive contaminant outlet tube separate from the valve and manually displaceable to operate and open the valve against the gas pressure. The tube may project from the valve casing sufficiently to enable it to be gripped and displaced to operate the valve without the risk of contaminant or compressed gas coming into contact with the operator's hand. An external drain pipe may be coupled to the tube and dis-

placed from a remote position to operate the valve. The tube can be snapped into a captive position in relation to the valve casing while being axially displaceable relatively to the casing



for operating the valve. The casing may comprise a skirt which is slotted and elastically expansible and provided with projections and a collar on the outlet tube can be forced past the projections to captivate the tube.

3,817,268

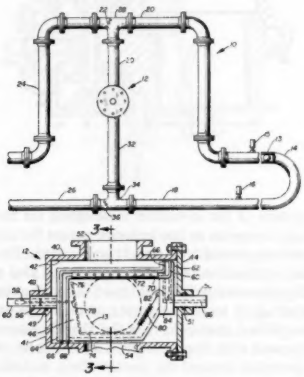
SPHERE LAUNCHING VALVE

Creal E. Kirkwood, 3237 N. Lewis, Tulsa, Okla. 74110

Filed June 12, 1973, Ser. No. 369,190

Int. Cl. F16k *25/00*

U.S. Cl. 137—268 **9 Claims**



This disclosure describes an improved type of sphere launching valve for use in meter prover systems. It comprises a horizontal axis cylindrical shell with opposed openings at top and bottom for the entry and exit of a sphere. There is a rotor axially supported in bearings with means to rotate the rotor at least through an angle of 180°. A sealing means is provided on the rotor so that an expansible tubular sealing element can be inflated by fluid pressure so as to seal between the rotor and the internal sealing surface of the housing or shell. In the preferred embodiment there are two parallel sealing means, these run in an axial direction and a circumferential direction so that they completely seal one of the two openings to the housing from the other. The rotor is shaped as a cup so that when the top of the cup is facing upward a sphere can be loaded into the cup shaped interior of the rotor. At a later time the rotor can be turned 180° and the open top of the cup will point downward so that the sphere can fall through the bottom opening of the housing, down through the pipe, and into the circulating system and the meter prover loop.

Inside the cup there is a hinged platform which is held up by a spring, but under the weight of the sphere, when the sphere is loaded into the rotor, the platform will move down to a bottom position. Means are provided, including a rod means passing through one axis of the rotor, and including a magnetic element extending beyond the housing so that the position of the platform whether lifted or depressed, will be indicated by the position of the magnet and therefore an external indication is provided of the presence of a ball inside the rotor.

3,817,269

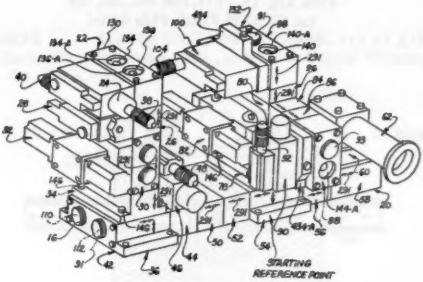
INTEGRATED MANIFOLD CIRCUITS

Robert E. Raymond, Zanesville, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.

Continuation of Ser. No. 852,231, Aug. 22, 1969, Pat. No. 3,589,387. This application Mar. 31, 1971, Ser. No. 129,785

Int. Cl. F16k *11/00*

U.S. Cl. 137—269 **17 Claims**



A hydraulic control apparatus comprising a plurality of standard multiple function conduit modules adapted to be selectively programmed in various arrays to effect substantially any required hydraulic control functions. The apparatus is further characterized by universal multiple function valve modules which co-operate with the conduit modules in effecting the control functions.

3,817,270

UNIVERSAL CLAMPING DEVICE FOR TUBING OF DIFFERENT DIAMETERS

Henry Ehrens, Bayside, N.Y., and Charles W. Slocum, Spring Lakes Heights, N.J., assignors to Sealed Unit Parts Co., Inc., Allenwood, N.J.

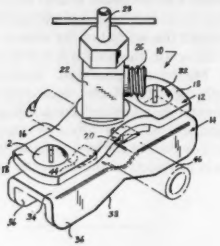
Filed May 26, 1972, Ser. No. 257,312

Int. Cl. B23b *41/08*; **F16e** *41/04*

U.S. Cl. 137—318 **12 Claims**

A clamp for different diameter tubing comprising an upper strap having a concave portion on the lower surface adapted to receive the tubing therein. A lower strap adapted to be fastened to the upper strap is provided whereby the upper and lower straps straddle the tubing to clamp the tubing therebetween. The lower strap is provided with means to receive tubing therein above a preselected diameter. Additionally, the lower strap is provided with upstanding support-

ing members which are adapted to support tubing of a preselected diameter along a horizontal center line drawn through the tubing to prevent deformation of the tubing of preselected diameter when, for example, the tubing is subjected to a piercing operation.



3,817,271

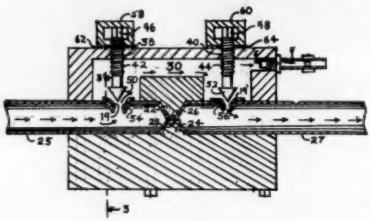
REFRIGERATION BY-PASS AND SERVICE VALVE

Louis Roven, 108 Northern Pky., Plainview, N.Y. 11803

Filed Aug. 15, 1971, Ser. No. 280,769

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—318 **5 Claims**



A refrigeration by-pass service valve. The valve comprises a pair of mating blocks adapted to be clamped together. The blocks are provided with inner complementary semi-circular walls forming a seat for copper tubing or pipe. Means for pinching the copper tubing or pipe to interrupt the flow of gas are provided in the blocks. One of the blocks is provided with a by-pass passage and means for securing a gauge and for charging a refrigeration or air conditioner hermetically sealed unit. The one block is provided with a pair of cone-shaped cutters for cutting holes in the copper pipe or tubing for communicating their pinched-off sections with the by-pass passage in the block. The cone-shaped cutters also act as valve closures for the cut holes.

3,817,272

SPLIT DISCHARGE SYSTEM FOR WASHING APPARATUS

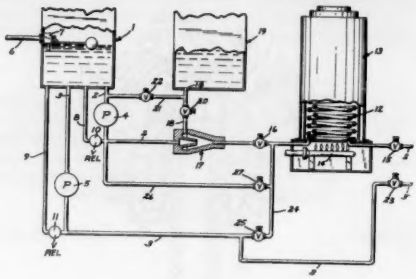
John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed Dec. 8, 1972, Ser. No. 313,457

Int. Cl. F16k *49/00*

U.S. Cl. 137—334 **8 Claims**

A system for supplying selectively, steam, hot water with or without detergent, or cold water, at various volumes from a source of water and a source of liquid detergent. A pair of independently operated pumps cooperate with a system of conduits, valves, and a boiler, to provide fluid at various predetermined temperatures and volumes to a point of delivery, such as washing apparatus.



3,817,273

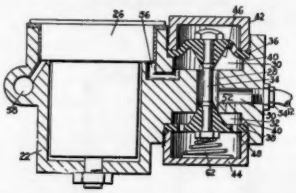
FUEL SYSTEM FOR DIESEL ENGINES

Curtis L. Erwin, Jr., 5805 S.E. Gladstone, Portland, Oreg. 97206

Division of Ser. No. 39,701, May 22, 1970, Pat. No. 3,672,394. This application June 16, 1972, Ser. No. 263,705

Int. Cl. F16k *49/00*

U.S. Cl. 137—338 **6 Claims**



The system of the invention is designed for treating liquid which may comprise as one instance means for cooling liquid. Such is accomplished by a novel cooling tank. The system has particular application in Diesel engines and also may be used as cooling systems for the liquid used in cooling machine tools. The system may include a meter arranged to measure consumption of fuel, particularly in the Diesel system. Where the system is used with Diesel engines and a meter is used, a by-pass is provided around the meter which includes a valve so that the by-pass can be used when it is desired that the flow be not measured.

3,817,274

LIQUID LEVEL CONTROL DEVICE

Howard L. Anderson, Southgate, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

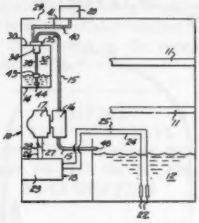
Division of Ser. No. 119,901, March 1, 1971, Pat. No. 3,729,013, which is a division of Ser. No. 807,609, March 17, 1969, Pat. No. 3,595,267. This application Nov. 20, 1972, Ser. No. 308,169

Int. Cl. F16k *31/02*

U.S. Cl. 137—392 **2 Claims**

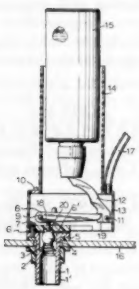
A liquid level control device, adapted for use with apparatus for dispensing fluid from a reservoir to a drum or tank, that in-

cludes a conduit and an electrical relay encased in a tubular housing and disposed in the reservoir. The conduit is operable to deliver a stored fluid from the reservoir to the drum of a



dispensing machine or the like and the relay is responsive to the level of liquid in the reservoir and connected to means for indicating when the liquid falls below a desired level.

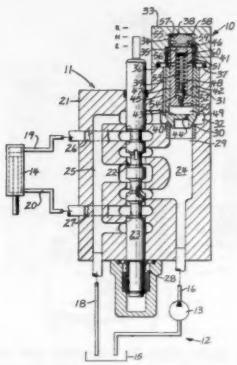
3,817,275
VALVE FOR TANKS OF SANITARY APPARATUS
Alfonso Villareal-Paredes, Nuevo Leon, Monterrey, Mexico
Filed Sept. 1, 1971, Ser. No. 177,008
Int. Cl. F16k *31/14*
U.S. Cl. 137—436 **3 Claims**



A water closet has as a float a partially water filled plastic bottle held in a guiding pipe for free vertical movement. A glass marble is used as a ball valve to admit water. The water level is controlled by the amount of water in the bottle which is a weight resting on a lever arrangement passing water into the closet until it is floated by the appropriate water level in the closet.

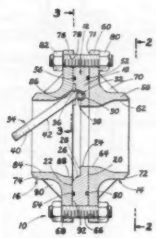
3,817,276
SELF-ALIGNING RELIEF VALVE
Lawrence F. Schexnayder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 5, 1973, Ser. No. 337,891
Int. Cl. F16k *31/12*
U.S. Cl. 137—491 **15 Claims**

A self-aligning relief valve disposed within a body having a valve bore providing an annular valve seat therein disposed intermediate a relatively high pressure zone and a low pressure zone with a dump valve loosely slidably fitted in the valve bore in alignment seeking relation and resiliently biased engagement with the seat including a control device slidably and sealingly disposed in the dump valve for controlling communication between the high pressure zone and the low pressure zone with the control device carried and guided exclusively within the dump valve to afford a dependable seal between the



relatively high and low pressure zones and is permitted to float with the dump valve during its alignment seeking engagement with the annular seat.

3,817,277
WAFER UNIT CHECK VALVE
Charles Wheatley, Tulsa, Okla., assignor to Charles Wheatley, Inc., Tulsa, Okla.
Filed Aug. 28, 1972, Ser. No. 284,205
Int. Cl. F16k *15/03*
U.S. Cl. 137—515.7 **2 Claims**

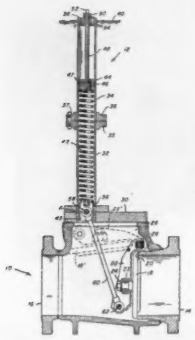


A wafer unit check valve comprising a unitary annular plate member having a pivotal closure member thereon and including a seating portion for the closure member, said plate provided with self contained sealing member and clamped between a pair of complementary flanged fitting members particularly designed and constructed for permitting freedom of movement for the closure member to provide an increased flow of fluid through the valve. The design of the flanged fitting members permits a minimum overall length for the check valve unit for reducing construction costs and weight of the valve.

3,817,278
SPRING CLOSING CHECK VALVE
Robert E. Elliott, Tulsa, Okla., assignor to FWI, Inc., Tulsa, Okla.
Filed Aug. 9, 1971, Ser. No. 169,911
Int. Cl. F16k *15/03*
U.S. Cl. 137—527 **5 Claims**

A check valve for use on a buried pipeline includes compressional spring means connected by linkage to the clapper,

and extending upwardly in a vertical tubular extension to the valve housing. Means sealed through the closed top end of the



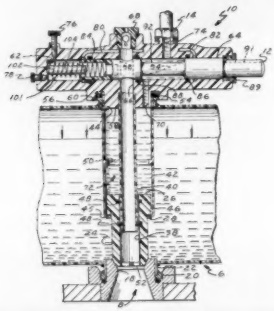
extension permit vertical adjustment of the position of the top end of the spring.

3,817,279

FLUID CONTROL MECHANISM

Wesley S. Larson, Enfield, Conn., assignor to Water Control Products, Inc., New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,350
Int. Cl. E03d *3/04*
U.S. Cl. 137—572 **4 Claims**



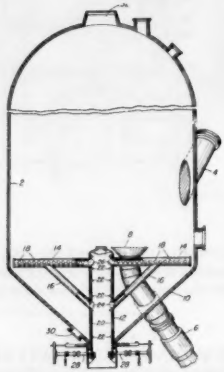
Hydraulic discharge system having a pressurizable water tank with an inlet for supplying water under pressure to the tank and a water discharge port with a piston valve to control the opening and closing of the port. An hydraulic chamber is located within the tank and receives the piston valve which is reciprocably movable in the chamber under the influence of differential pressure acting thereon to open and close the discharge port. Conduits interconnect the hydraulic chamber with a water inlet to pressurize the chamber and to fill the tank and with a vent communicating with the discharge port to relieve the pressure in the chamber. The system also includes an actuator mechanism including a plunger movable between one position interconnecting the chamber with the water inlet and to another position interconnecting the chamber with the vent and having a dashpot for time controlled return of the plunger from its second to its first position whereby a predetermined quantity of water is directed through said vent to the discharge port.

3,817,280

REGENERATION GAS DISTRIBUTOR GRID

Pasquale J. Celani, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 20, 1973, Ser. No. 343,080
Int. Cl. F17d *1/04*
U.S. Cl. 137—592 **3 Claims**



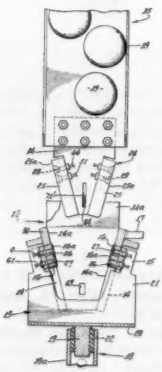
The apparatus and system for distributing regeneration gas across the lower cross section of a fluid bed of particles to be regenerated is described wherein a distributing grid comprising individual distributing grid segments radiating substantially horizontally from a regeneration gas central manifold are individually controlled by valve means in conduit means communicating with the individual distributing grid segments.

3,817,281

UNDERWATER MULTIPLE FLUID LINE CONNECTOR

George E. Lewis, Arcadia, and Fernando Murman, Palos Verdes Peninsula, Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed Apr. 30, 1973, Ser. No. 355,702
Int. Cl. F16l *39/00*
U.S. Cl. 137—594 **14 Claims**



Connector apparatus capable of making underwater fluid pressure connection with underwater equipment comprises

a. upwardly opening receptacle means to be carried by the underwater equipment, said means having opposed interior faces which are substantially flat and which taper

downwardly, there being ducting in the receptacle means and terminating at at least one of said faces,

b. and a wedge shaped member displaced downwardly to seat in the receptacle means, said member having exterior faces which are substantially flat and which taper downwardly, there being ducting in said member and terminating at at least one of said exterior faces for communication with the ducting in the receptacle means in response to said seating.

3,817,282

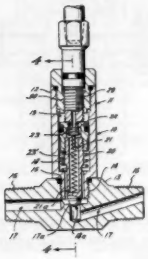
IN-LINE TEST VALVE

Clifford M. Peters, P.O. Box 975, Kilgore, Tex. 25662

Filed Sept. 14, 1972, Ser. No. 288,955

Int. Cl. G01l *27/00*

U.S. Cl. 137—607 **3 Claims**



A test valve is positioned between a first fluid pressure source acting on valve means to be tested and includes first fluid passage means to normally communicate the first fluid pressure source with the valve means to be tested, and also includes alternate passage means which is normally closed off by the check valve means so that when flow through the first fluid passage means is closed, the first fluid pressure source can be shut off from acting on the valve means to be tested and the alternate passage means then communicated with a test pressure source and the first passage means to flow test fluid from the exterior of the test valve to the valve means to be tested to test the functioning of the valve means. When the testing has been accomplished, the test valve is constructed and arranged so that it will automatically close off the alternate passage means and re-establish communication with the first fluid pressure source normally acting on the valve means whereby the tested valve means returns to normal operation in relation to the first fluid pressure source.

3,817,283

DIFFERENTIAL PRESSURE TRANSDUCER PROCESS MOUNTING SUPPORT

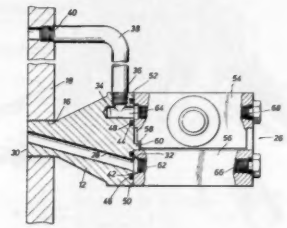
John E. Hewson, 12211 Broken Arrow, Houston, Tex. 77024

Continuation-in-part of Ser. No. 132,165, April 7, 1971, abandoned. This application May 30, 1972, Ser. No. 258,019

Int. Cl. F17d *1/00*

U.S. Cl. 137—608 **17 Claims**

A mounting support serving as an interfacing connection between a process vessel or a valve or other fluid pressure transmitting structure connected to a process vessel and an instrument capable of sensing the differential pressure between the vapor-space pressure and the hydrostatic head pressure of fluid within the process vessel for the purpose of meansuring liquid level within the vessel. The mounting support in addition to providing structural support for the differential pressure sensing apparatus serves to transmit vapor pressure to the low side and hydrostatic head pressure to the high side of the differential pressure mechanism. The support may also be provided with a bypass passage between high and low pressure passages within the support for the purpose of establishing a balanced pressure condition between the low pressure and high pressure sides of the differential pressure sensing



mechanism for the purpose of calibration, which bypass passage is provided with appropriate valve means to control fluid communication between the passages. The support includes orienting means to insure proper installation thereof.

3,817,284

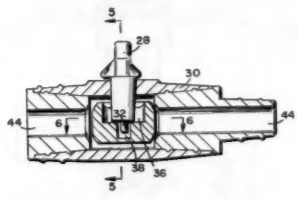
PUMP AND VALVE

Wilma J. Daugherty, 615 Civic Center Dr., Suite 215, Santa Ana, Calif. 92701

Filed May 7, 1971, Ser. No. 141,313

Int. Cl. F16k *31/52*

U.S. Cl. 137—614.13 **2 Claims**



A combination pump, life preserver and carrying and storage container is presented. The structure includes a bellows having at least one and preferably two two-way check valves (in, out, stop). The structure further includes a handle at each end of the bellows. To operate as an air or fluid pump, or to remove fluids, each valve is adjusted to in or out and the ends of the bellows are pumped together and apart. To operate as a life preserver, the bellows is expanded, filling the structure with air, and each valve is closed, preventing the air from escaping. Closing each valve permits the structure to carry or store fluid.

3,817,285

FLUID DISPENSING NOZZLE

Paul R. Wilder, and Chester M. Wood, both of Cincinnati, Ohio, assignors to Dover Corporation, New York, N.Y.

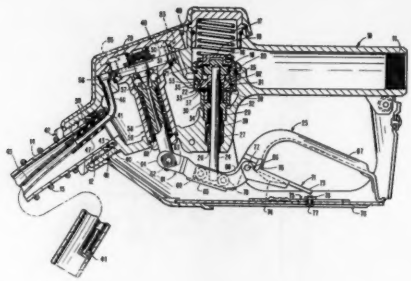
Filed Apr. 17, 1972, Ser. No. 244,844

Int. Cl. F16k *23/00*; **B67d** *5/373*

U.S. Cl. 137—614.19 **12 Claims**

A fluid dispensing nozzle has a first venturi created between a seat ring and a movable, resiliently biased poppet valve. The

resistance of the movable poppet valve is decreased as the flow rate increases by a second venturi effect, which reduces



the pressure in a chamber formed within the movable poppet valve.

3,817,286

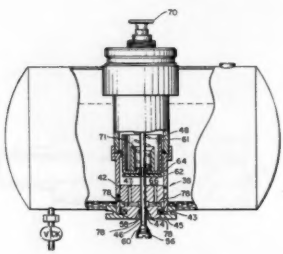
HYDRAULIC FLUSH TANK WITH IMPROVED SEATING AND RESEALING MEANS

Roger P. Caron, North Andover, and Thomas P. Howard, Ashland, both of Mass., assignors to Water Control Products, Inc., Birmingham, Mich.

Filed Aug. 17, 1972, Ser. No. 281,403

Int. Cl. E03d *3/02*; F16k *21/18*

U.S. Cl. 137—628 **8 Claims**



A valve, plug and pressure responsive diaphragm combination for use in a flushing device of the type which includes a closed container for receiving and retaining a quantity of pressurized water. The plug is capable of being seated within the outlet of the tank and has an aperture therein into which the valve is slidably received. The valve is attached to a stem which in turn is affixed to the diaphragm. The plug, which cannot move to a position lower than the seated position, is moved upward from a seated position when the tank is flushed by pulling on a knob affixed on the end of the stem opposite the valve. The valve can move in both an upward and downward direction from the seated position. When the knob is pulled in an upward direction, the valve causes the plug to move in an upward direction. However, because the valve is free to move in a downward direction independently of the movement of the plug, liquid can flow through the aperture in the plug to reseal a bowl after the tank has been flushed and the plug has been seated. To reseal the tank, the diaphragm responds to the pressure created by liquid coming into the tank, after the tank has been flushed, by rising and thereby slowly raises the valve until the valve is seated in the aperture in the plug.

3,817,287

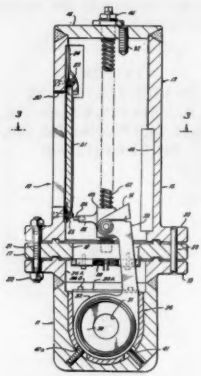
ORIFICE FITTING

Melvin N. Aitken, 8403 Limerick, Houston, Tex. 77024

Filed Mar. 20, 1972, Ser. No. 235,932

Int. Cl. F16l *55/10*

U.S. Cl. 138—94 **15 Claims**



There is disclosed an orifice fitting having a flowway connectible in a pipeline and an orifice plate removably disposable across the flowway.

3,817,288

HOSE PIPES

Eric Ball, Newcastle-upon-Tyne, England, assignor to Dunlop Holdings Limitied, London, England

Filed Jan. 22, 1971, Ser. No. 108,728

Claims priority, application Great Britain, Jan. 26, 1970, 3686/70; May 21, 1970, 24693/70

Int. Cl. F16l *11/00*

U.S. Cl. 138—125 **9 Claims**

A reinforcement structure and a method of assembly of hose-pipe for heavy or light duty use of thick or thin wall construction in which a non-woven matrix material layer supports the reinforcement members in a winding operation during assembly into the hose. More than one layer of matrix may be utilized. The matrix layer and reinforcement members may be applied in the form of a composite strip or strips pre impregnated with polymeric material, of which the following is a specification.

3,817,289

CEMENTITIOUS PRECAST CONSTRUCTION UNIT

Homer R. Coffman, Blanchard Ln., North Versailles, Pa.

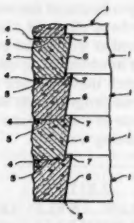
Filed Jan. 18, 1973, Ser. No. 324,773

Int. Cl. F16l *25/00*

U.S. Cl. 138—155 **2 Claims**

A precast unit, preferably of cementitious material, of circular outline having stone-like block units on the outer surface

separated by mortar joints and top shoulder annular portions to serve as a guide to enable stacking like units above each



other. The inner surface of each unit and outer surface of each projection extend in a downwardly and outwardly extending direction to provide a stepped inner wall.

3,817,290

CONVOLUTED CONDUIT CONSTRUCTION

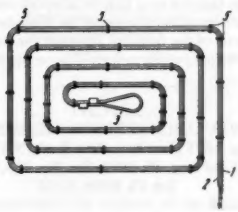
Hans Hilgemann, Recklinghausen, Germany, assignor to Tour Agenturer AB, Johanneshov, Sweden

Filed Feb. 2, 1973, Ser. No. 329,187

Claims priority, application Germany, Feb. 4, 1972, 7204132

Int. Cl. F16l *53/00*

U.S. Cl. 138—178 **9 Claims**



At least two substantially parallel conduit portions having respective open ends are connected by a substantially horseshoe-shaped tubular fitting two parallel end portions of which each communicate with one of the open ends and which in turn are connected by a loop-shaped intermediate portion. The inner diameter of the fitting is equal to that of the conduit portions. The conduit portions are of synthetic plastic material; the fitting may be of synthetic plastic or metallic material.

3,817,291

AUTOMATIC PROGRESSIVE SHED LOOM

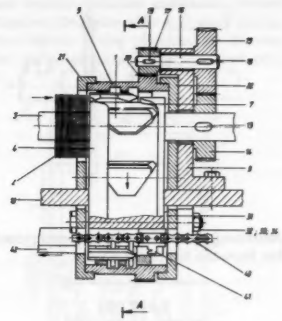
Gunter Welzel, Karl-Marx-Stadt, Germany, assignor to VEB Wirkmaschinenbau Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

Filed Oct. 17, 1972, Ser. No. 298,222

Int. Cl. D03d *47/26, 45/00*

U.S. Cl. 139—12 **7 Claims**

The invention relates to a take-up transport device for the shuttles of a progressive shed automatic loom coming out of the shed, there being used as take-up and transport means an onwardly-rotatable magazine rim for the temporary retention



and onward movement of the shuttles up into the return device.

3,817,292

APPARATUS FOR SHEDDING IN WEAVING LOOMS

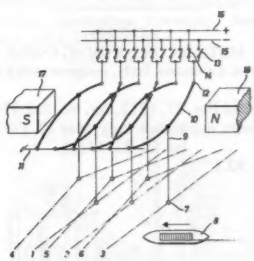
Peter Doehler, Kaulbachstrasse 59, and Erich Rudolf Baumgartner, Tiroler Platz 4, both of Munich, Germany

Filed Apr. 18, 1972, Ser. No. 245,143

Claims priority, application Germany, Apr. 20, 1971, 2119053

Int. Cl. D03c *13/00, 19/00*

U.S. Cl. 139—55 **28 Claims**



A shedding apparatus for a weaving loom has the warp threads thereof connected to corresponding electrical conductors located in a transverse magnetic field. Current is selectively directed to the conductors so that they selectively displace their associated warp threads to form a shed.

3,817,293

LOOM STOP MOTION

Richard L. Childs, Mendon, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

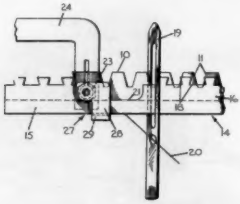
Filed Apr. 30, 1973, Ser. No. 355,721

Int. Cl. D03d *51/28*

U.S. Cl. 139—369 **1 Claim**

A flexible keeper device carried by the sliding feeler bar of a

loom stop motion for maintaining the feeler bar in operating position within the motion's sliding feeler bar holder, and by



manually deforming the device permit unrestricted removal of the feeler bar from the feeler bar holder.

3,817,294

CURTAIN CLOTH

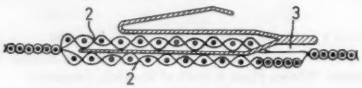
Kazumi Tsuda, 58, Aza Togo Oaza Wadakatsusa Konanshi, Aichiken, Japan

Filed Dec. 13, 1971, Ser. No. 207,080

Claims priority, application Japan, Dec. 16, 1970, 45-126135

Int. Cl. D03d *1/00, 1/06*

U.S. Cl. 139—387 A **1 Claim**



Curtain cloth of fabric or knitting fabric having a width which is the same length of curtains to be made therefrom and which includes many pouched parts at one edge thereof spaced apart at suitable intervals, into which hooks are inserted.

3,817,295

METHOD OF WINDING COILS

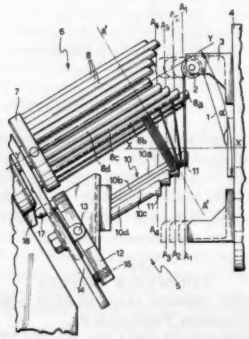
Giorgio Barrera, Leumann, Italy, assignor to MECBAR S.p.A., Turin, Italy

Filed Dec. 27, 1972, Ser. No. 318,976

Claims priority, application Italy, May 17, 1972, 68549/72

Int. Cl. B21f *3/00*

U.S. Cl. 140—92.1 **2 Claims**



A method for winding coils for the stator of an electric motor uses apparatus which includes a support arrangement onto which the coils are wound, which comprises a plurality of elongate supports either in the form of rods or shaped support elements, the supports are arranged in coaxial groups in such a way that the ends of the supports of each group lie in a plane which is at an angle to the axis of the supports. The method includes the steps of winding a coil on a selected group of first and second supports by rotation of the winding head and then advancing the winding head along its axis of rotation to wind subsequent coils on further groups of supports. The axis of rotation of the winding head lies at an angle to the axis of the support arrangement such that coils are initially wound at an angle to the supports but progressively slide to adopt a plane perpendicular to the axis of the supports by virtue of the tension on the wire as it is being wound.

3,817,296

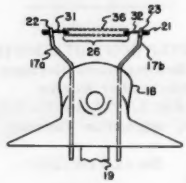
METHOD OF MAKING AN ELECTRODE HAVING A FILAMENT WITH EXTENDING LEGS

Eugene Lemmers, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,564

Int. Cl. B21f *45/00*

U.S. Cl. 140—71.6 **4 Claims**



An electrode, such as for a fluorescent lamp, is made by providing a helically wound filament, attaching the filament near the ends thereof to a pair of support wires, temporarily holding an intermediate portion of the filament, and pulling or stretching turns of the filament between the held intermediate portion and the lead wires to form legs on the filament.

3,817,297

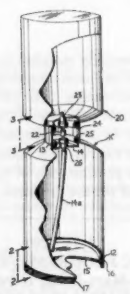
REUSABLE AEROSOL DISPENSER

Hugh R. King, 1075 First Ave., New York, N.Y. 10022

Filed Aug. 20, 1971, Ser. No. 173,529

Int. Cl. B65b *31/00*

U.S. Cl. 141—20 **4 Claims**



A refillable and rechargeable aerosol dispenser adapted for home filling and pressurization as well as refilling and repressurization by the consumer. A removable closure member is provided for sealing off a product-fill opening located in the base of the dispenser container. The removable closure loca-

tion provides (a) that no modification to conventional aerosol neck structures or dispensing valve assemblies need be made, and (b) that conventional aerosol container design can be simplified by inserting the valve body through the open base and affixing the valve body directly to the container neck. The closure member is readily secured to or removed from the container by simply operated means of either a screw-on closure or a snap-on closure. In the snap-on closure the internal gas or vapor pressure in the container is utilized to secure the closure member in place and thus seal the dispenser container. In one embodiment, the propellent fill valve is secured directly to the closure member to permit pressurization through the base of the container, allowing the top dispensing valve to be of the toggle action type for the dispensing of heavy foams and whips. An optional plunger can be inserted through the base opening after the container is inverted and filled with a viscous or semi-solid product. After securing the closure member to the container, the container is pressurized by connecting a propellent bomb to the propellent fill valve so as to charge the chamber enclosed by the plunger. Actuation of the top dispensing valve causes the plunger to be driven upwards, thereby ejecting the product.

3,817,298

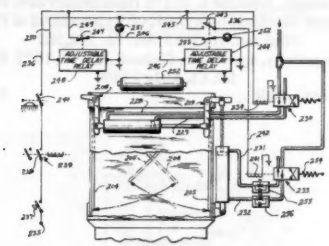
VERTICAL PRESS APPARATUS WITH REMOTELY CONTROLLED DISTRIBUTOR

Francis B. Fishburne, 24 Summit Dr., Asheville, N.C. 28704

Continuation-in-part of Ser. No. 845,746, July 29, 1969, Pat. No. 3,595,282. This application July 27, 1971, Ser. No. 166,433

Int. Cl. B65b *1/24, 1/38, 5/10, 37/02, 57/18, 63/02*

U.S. Cl. 141—80 **6 Claims**



The invention provides for control of the distributor from the floor level in apparatus for packing fragmentary compressible material, such as tobacco, into containers when the apparatus is of the type comprising a support for the container, an upright tubular charger arranged above the container, a pressing ram movable downwardly through the charger, an infeed conveyor, and a distributor located at the top of the charger and including deflector means presented at a plurality of locations spaced about the top of the charger for so deflecting the compressible material, as it is supplied by the infeed conveyor, that the material is distributed uniformly over the transverse cross-sectional extent of the charger. Adjustable time delay devices are employed at the floor level for adjusting dwell times of the deflector means according to fill conditions observed at the floor level by the operator.

3,817,299

EXPANSIVE GAS PROTECTIVE DEVICE

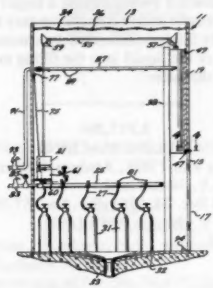
Carlton L. Koehler, Box 236, Avalon, Calif. 90704

Filed Apr. 10, 1972, Ser. No. 242,533

Int. Cl. B65b *3/04*

U.S. Cl. 141—82 **6 Claims**

An expansive gas protective device for use in a personnel work area and including a heavy walled protective vessel formed with a high pressure work piece chamber disposed in the work area and formed with a discharge outlet opening to an area remote from such work area and a doorway opening into such work area and normally covered by a heavy door. A high pressure source includes connector means disposed within the chamber for connection with work pieces located in such chamber. Means is also provided for moving the door between open and closed positions. Thus, work pieces may be



placed in such chamber and the connectors connected therewith, the door closed and the high pressure source actuated to pressurize the work pieces. In the event of a failure and rapid expansion of gases in such chamber, the expanding gases will be directed out such outlet to the area remote from the work area and, likewise, any debris or airborne work pieces will also be directed away from the work area to protect personnel working in such area.

3,817,300

FILLING AND DOSING APPARATUS FOR VISCOUS SUBSTANCES

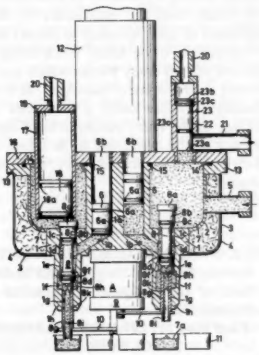
Henri Donnet, Falaise, France, assignor to FORMSEAL, Beratungs-, Vertriebs und Herstellungsgesellschaft mbH, Essen, Dusseldorf, Germany

Filed June 9, 1972, Ser. No. 261,401

Claims priority, application Germany, June 9, 1971, 7122412; July 9, 1971, 2134207

Int. Cl. B65b *3/32*

U.S. Cl. 141—117 **4 Claims**



A dosing-and filling-device for viscous and/or stringy liquids having a liquid return suction device in a filling nozzle, which comprises a housing having a storage chamber, at least one dosing chamber and formed with a slide bore in operative communication with the storage chamber and the dosing chamber.

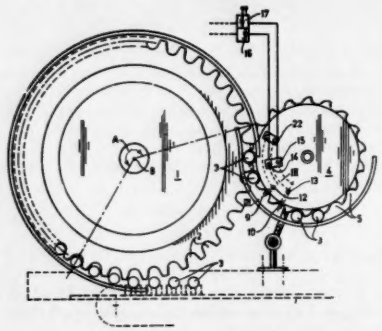
A control slide is disposed in said bore, and a filling nozzle is formed integrally with the control slide and displaceable in the bore in the housing. A control device moves upwardly and downwardly the control slide with the filling nozzle in a cycle and is designed such, that in an upper position thereof a communication is provided between the storage chamber for the liquid and the dosing chamber and in a lower position a communication is provided between the dosing chamber and the filling nozzle. At least a portion of the control slide is in the form of a lower control piston having a larger diameter than that of the filling nozzle and is complementary to the bore and disposed above the filling nozzle, thereby causing a return suction of a portion of the liquid into the filling nozzle during an upward stroke of the latter.

3,817,301

FILLING MACHINE

Klazinus Albertus Van T'Blik, Arnhem, Netherlands, assignor to Stork-Ima N.V., Netherlands

Filed Dec. 24, 1969, Ser. No. 887,993
Int. Cl. B65b *43/50*
U.S. Cl. 141—156 **4 Claims**



A machine for filling containers with a liquid. A tank holding a liquid revolves around its vertical axis and has a plurality of filling stations distributed around its circumference, each station having a valve with a control member. A rotatable feeding member having a plurality of locations to house containers to be filled, fees the containers to the machine. A feeler is positioned in each location to detect the presence or absence of a container to be filled. Each feeler is operatively connected to one of two entry pieces which are in turn operatively connected to the control members. If a location in the rotatable feeding member holds a container to be filled, a feeler signals one of the entry pieces to hold open a valve. If a location does not hold a container to be filled, a feeler signals one of the entry pieces to close a valve, thus preventing fluid from being wasted.

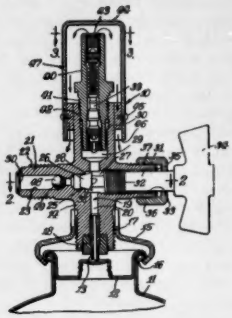
3,817,302

CAN TAPPER WITH EXPLOSION PREVENTING MEANS

Leonard J. Kowal, Prospect Heights, and Robert C. Gibson, Chicago, both of Ill., assignors to Imperial-Eastman Corporation, Chicago, Ill.

Filed May 11, 1972, Ser. No. 252,456
Int. Cl. B65b *3/04*
U.S. Cl. 141—383 **13 Claims**

An apparatus for transferring pressurized fluid from a first fluid container to a second fluid container with means for preventing explosion of the first container as a result of high pressure therein. The first container illustratively comprises a can of pressurized fluid and the transferring apparatus illustratively comprises a can tapper arranged to pierce a pierceable portion of the can, and having valve means for controlling the flow of the pressurized fluid from the pierced can to the second container. Means are associated with the can tapper for causing a cooling of the can by directing fluid against the



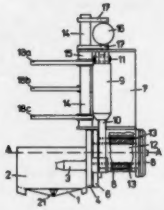
can as an incident of the pressure of the fluid in the can rising above a preselected abnormally high level. The can tapper includes means for limiting the fluid pressure in the pierced can to a preselected maximum pressure at all times irrespective of the open or closed condition of the control valve.

3,817,303

TREE CROSSCUTTING DEVICE, IN PARTICULAR FOR FELLING GROWING TREES

Mikko Kantola, Haukitie 6, 02170 Haukilahti; Paavo Haataja, and Pentti Saarinen, both of 05200 Rajamaki, all of Finland

Filed Jan. 10, 1973, Ser. No. 322,282
Claims priority, application Finland, Jan. 13, 1972, 84/72
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 R **7 Claims**



A tree crosscutting device, in particular for felling growing trees, for attachment to a tractor or equivalent, having two cutting bits which enter the wood from opposite directions, urged by attached action means. The bits are turnably mounted on the body structure of the device, and the invention is particularly characterized in that their turning axis is common to both and parallel with the principal straight line passing through the opposite extreme points of their cutting edges, and carried in a journalling pivot. Furthermore, the cutting bits are shaped to conform to part of a double cone, the central axis of which coincides with said turning axis. Thereby, the cutting edge presents a V-shaped ridge, which promotes the splitting of the tree stump and reduces the penetration resistance of the cutting bits.

Additional, optional characteristics specify various details concerning the geometry of the cutting bits and their V-ridge. A wedge, additional to the cutting bits proper, is also specified and described in some detail, as well as details of the cutting bit holders and of the journalling arrangements associated with the common axis of the cutting bits.

3,817,304
CUTTING TOOL FOR PARTS MADE OF WOOD OR SIMILAR MATERIAL

Louis-Andre Duong Vinh, Auxerre, France, assignor to Etablissements Guilliet, Auxerre, France

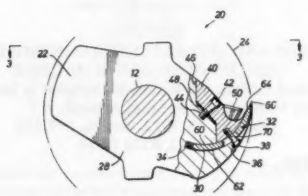
Filed Aug. 31, 1971, Ser. No. 176,571
Claims priority, application France, Sept. 7, 1970, 70.32415; July 2, 1971, 71.24229
Int. Cl. B27f 5/00, 1/02; B27g 17/00
U.S. Cl. 144—136 R 11 Claims

Tool for working wood or similar materials comprising a body of elongated shape as well as at least one cutting part projecting out with respect to the body, and whose cutting direction is parallel to the latter's length, in which the cutting part provides a cutting edge which diverges backwards obliquely from the body with respect to the direction of advance of the tool, comprising at least one cutting part providing a cutting edge having a profile of concave festoons.

3,817,305
CUTTER TIP

Wallace E. Gibbs, Splendora, Tex., assignor to I. W. Ferguson and J. W. McNaughton, both of Splendora, Tex., part interest to each

Filed Oct. 19, 1972, Ser. No. 298,850
Int. Cl. B27g 13/00
U.S. Cl. 144—231 9 Claims



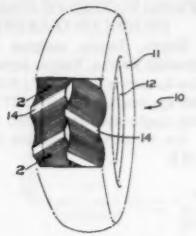
A removable and replacable cutting tip which is readily dressed after wearing for use in a profile cutter wherein the tip is preferably formed of circular stock and is dressed by grinding to an edge along only one face which intersects one of the two curved faces of the circular stock. The cutting tip is locked in position to expose a cutting edge. As the edge wears, the cutting tip is removed and dressed by grinding along one face only. The one face intersects one of the naturally formed curved or cylindrical surfaces, keeping in view that the apparatus is formed of circular stock. Slots are included for ready mounting on a profiling head.

3,817,306
MUD RESISTANT TIRE

James Sidles, Richfield, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Division of Ser. No. 173,883, Aug. 23, 1971. This application Mar. 5, 1973, Ser. No. 338,158
Int. Cl. B60c 11/08
U.S. Cl. 152—209 R 4 Claims

A tire whose tread has a mud resistant construction. Sections of the tire tread between the rib design utilizes a resilient flexible material having a plurality of angularly disposed thin flexible fins with narrow parallel grooves therebetween which

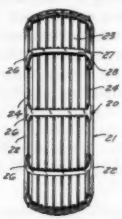


cooperate to trap air on compression of the fins to minimize mud build-up.

3,817,307
ANTI-SKID ASSEMBLY

John H. Detwiler, Westbury, N.Y., assignor to Detwiler Corporation, Westbury, N.Y.

Continuation-in-part of Ser. No. 56,475, July 20, 1970, Pat. No. 3,683,990, which is a continuation-in-part of Ser. No. 847,965, Aug. 6, 1969, abandoned. This application June 13, 1972, Ser. No. 262,280
Int. Cl. B60c 27/10
U.S. Cl. 152—226 19 Claims

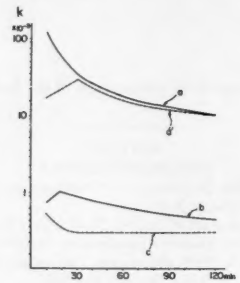


An anti-skid assembly adapted to be removably mounted on a tire having a pair of opposed side walls and a peripheral road contacting outer circumferential surface. The assembly includes a plurality of deformable straps with each strap having a greater width than thickness and having a length sufficient to permit the central portion of each strap to extend transverse to the circumferential surface of the tire across the entire surface. The end portions of each strap extend beyond in adjacent relationship to at least a portion of the opposed side walls of the tire. Anchor means are provided and are connected to the straps and they are adapted to normally attach the straps to the tire with the straps being in spaced relationship on the outer surface of the tire. The central portion of each strap is adapted to be normally positioned on the circumference of the tire with the dimensional width sides being substantially parallel with the circumferential surface of the tire so that when the tire is rotating in normal engagement with a road surface each strap will remain in the normal position and offer minimum resistance to driving engagement between the tire and road and when the tire skids on soft surfaces such as snow, mud or sand surface frictional and/or mechanical engagement between each strap and the road will cause the strap to automatically deform and twist so that at least a portion of the dimensional width on the undersurface of the strap is brought into contact with the snow, mud or sand surface thereby increasing mechanical engagement with the road and assisting in stopping the slippage and returning the tire to normal engagement with the road covering. At that time, the strap will automatically return to its normal configuration and position.

3,817,308
METHOD OF PREPARING A WATER-SOLUBLE POWDER CONTAINING ACTIVE COMPONENTS FROM MINERAL SPRING WATERS OF SPAS AND PRODUCT PRODUCED THEREBY

Teruo Bundo, Beppu, Japan, assignor to Tokyo Yakuhin Kaihatsu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 51,916, July 2, 1970, abandoned. This application Feb. 21, 1973, Ser. No. 334,293
Claims priority, application Japan, Oct. 14, 1966, 41-67113
Int. Cl. B01d *1/16;* **F26b** *3/12*
U.S. Cl. 159—48 R **11 Claims**

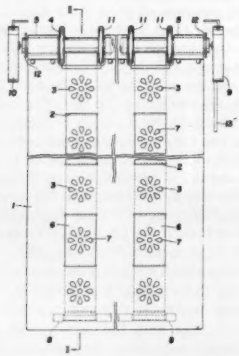


A method of preparing a water-soluble powder containing the water-soluble active components contained in a natural mineral spring water, which comprises adding a water-soluble assistant selected from the group consisting of excipients and protective colloids to the natural mineral spring water having a physiological spa effect as determined by the hydrogen peroxide decomposition property, k_1/k_2, of not less than about 1.3 and spray-drying the natural mineral spring water mixed with the assistant. The power obtained has essentially the same characteristics when mixed with water as the original spa water.

3,817,309
CURTAIN

Ietsugu Takazawa, Bancho-Chidorigabuchi Habitation 901, 3 Sanbancho, Chiyoda-ku, Tokyo, Japan

Filed Jan. 15, 1973, Ser. No. 323,368
Claims priority, application Japan, May 13, 1972, 47-46899
Int. Cl. A47h *5/00;* **E06b** *3/94*
U.S. Cl. 160—84 **1 Claim**

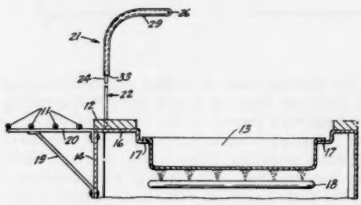


A curtain in which a curtain body and draw tapes therefor have slits and patterns are punched therein, the suspender is inserted through the above mentioned slits, a weight is fitted to the lower end part of said suspender (6), the curtain is fitted in the upper end part to a winding shaft through tubes idling on said winding shaft, the suspender is fitted in the upper end part to said winding shaft and a winder is connected with said winding shaft.

3,817,310
SHIELD ASSEMBLY

Ross K. Petersen, 2974 W. River Rd., Minneapolis, Minn. 55406

Filed Aug. 30, 1972, Ser. No. 284,958
Int. Cl. A47h *33/00*
U.S. Cl. 160—405 **10 Claims**

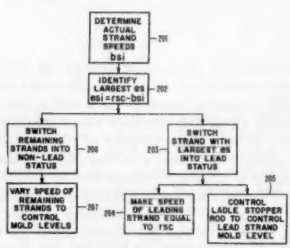


A shield assembly mountable on a support separating a first area supporting a food tray from a second area containing food storing pans, as found in a cafeteria food service line. A disposable elongated transparent sheet member is held with a rod frame in a linear position along the food service line to provide a barrier between the consumers and the food storing pans. The sheet member has spaces for accommodating the frame, whereby the sheet member can be removed from the frame. The frame can have an upper portion projected over the food storing pans.

3,817,311
METHOD AND APPARATUS FOR CONTROLLING A CONTINUOUS CASTING MACHINE

Werner Karl Pellinat, Taylors, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,523
Int. Cl. B22d *11/10*
U.S. Cl. 164—4 **9 Claims**



A method and apparatus for controlling a multistrand continuous casting machine having a ladle with a device for controlling the pour rate thereof, a tundish with a plurality of discharge ports, a plurality of open-ended water cooled molds for receiving strands of melt from the tundish discharge ports, spray water cooling for each strand as it leaves its associated mold and a plurality of strand feeding devices for withdrawing the strands from the molds. The control method and apparatus detects which strand is the fastest strand, causes this strand to be withdrawn at a constant predetermined maximum casting

speed and controls the mold level for this strand by manipulating the device for controlling the ladle pour rate. The mold levels for the remaining strands are controlled by manipulating the speed of the strands. If one of the remaining strands becomes faster than the leading strand, the controls are switched whereby the new leading strand is withdrawn at the constant maximum allowable casting speed and its mold level is controlled by manipulating the pour rate. The control over the previous leading strand is switched and its mold level is now controlled by varying its speed.

3,817,312

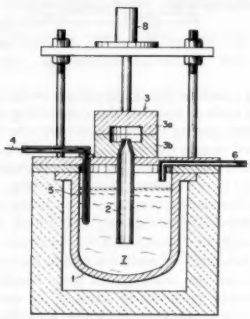
METHOD OF SULPHURIZING STEEL MOLD PARTS AND PARTS PRODUCED THEREBY

Itaru Niimi, Nagoya; Yasuhisa Kaneko, Toyota; Akiyoshi Morita, Toyota; Yasuo Nemoto, Toyota; Mitsuyoshi Sato, Toyota; Hisami Suzuki, Nagoya, and Naoyoshi Watanabe, Nakashima, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi-ken, Japan

Filed Aug. 30, 1972, Ser. No. 285,009

Int. Cl. B22c *3/00*

U.S. Cl. 164—72 **11 Claims**



An aluminium or aluminium casting is made by a casting machine using components of a ferreous material the portions of which come into contact with the molten aluminium or aluminium alloy during the casting have sulphurized surface layers which are highly resistant to the corrosive attack of the molten metal.

3,817,313

A METHOD OF CONTINUOUSLY CASTING METAL

Peter Charles David Gamble, Wootton, and John Marsh, Putnoe, both of England, assignors to Davy-Ashmore Limited, London, England

Filed Jan. 18, 1972, Ser. No. 218,804

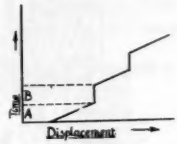
Claims priority, application Great Britain, Jan. 19, 1971, 2536/71

Int. Cl. B22d *11/02*

U.S. Cl. 164—83 **5 Claims**

In a continuous casting process the casting is intermittently withdrawn from a stationary horizontal mould by the action of at least one pair of pinch rolls which engage the casting and at least one of the rolls is driven. After each withdrawal phase a push-back force is applied to the casting by the pinch rolls to urge the casting back towards the mould. The push-back force is sufficiently large to allow the casting to contract back towards the mould but it is insufficiently large to cause displacement of the casting at the inlet end of the mould.

Apparatus of the invention includes means for driving the pinch rolls in the direction to withdraw the casting from the mould and means by which the drive means is energised after each withdrawal phase to rotate the pinch roll in the opposite



direction of rotation to apply a limited push-back force to a casting engageable by the pinch roll. Both pinch rolls are preferably driven in which case they are driven by separate drive means which may be hydraulic motors.

3,817,314

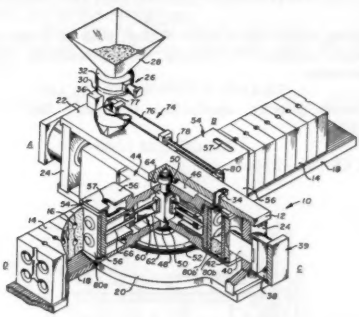
FLASKLESS MOLDING MACHINE

Vagn Deve, Shaker Heights, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 5, 1973, Ser. No. 338,123

Int. Cl. B22c *15/08*

U.S. Cl. 164—173 **10 Claims**



A flaskless molding machine is disclosed for producing continuous stacks of molds. The machine comprises four operating stations disposed on ninety degree spacing about its periphery. Two oppositely disposed stations are mold forming stations and the alternate two stations are the receiving ends of oppositely spaced mold decks upon which the completed molds are stacked. A body containing four mold forming chambers oscillates between two positions to place the respective chambers alternately in alignment with the mold forming stations and the ends of the mold decks where the operations are performed.

3,817,315

FOUNDRY SAND ARTICLE FORMING MACHINE

Gilbert J. Janke, Parma, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

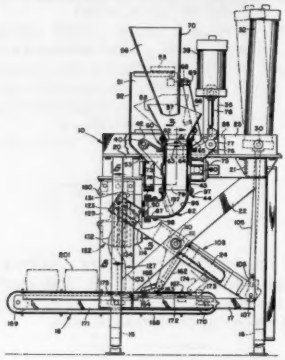
Division of Ser. No. 10,768, Feb. 12, 1970, Pat. No. 3,6[illegible]770. This application Sept. 3, 1971, Ser. No. 177,821

Int. Cl. B22c *17/08*

U.S. Cl. 164—224 **2 Claims**

A machine for the production of foundry sand articles including a first piston-cylinder assembly for forming a box, a

second such assembly for filling a reservoir with molding sand and clamping such reservoir laterally against such box for the sand to be blown therein, the first assembly disassembling



such box and stripping the sand article therein onto a discharge conveyor after the second assembly has withdrawn the reservoir for filling, the first assembly also indexing the conveyor.

3,817,316

APPARATUS FOR INTRODUCING A LAUNCHING ROPE IN A CONTINUOUS CASTING INSTALLATION FOR METAL

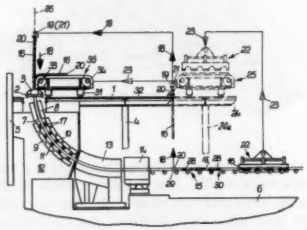
Wilhelm Koch, and Gustav Walter, both of Duisburg, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Dec. 8, 1970, Ser. No. 96,155

Claims priority, application Germany, Dec. 7, 1969, 1961443

Int. Cl. B22d *11/08*

U.S. Cl. 164—274 **2 Claims**



A launching rope for use in a continuous casting installation particularly for steel is transferred, before the start of casting, by moving its one end to a position closing the continuous mold. The other end is positioned into the zone of force-transmitting feed rolls. The method of transportation is characterized by the fact that the launching rope is lowered into the extrusion guide way from above in the zone of the casting platform level or a little lower. The launching rope which is selected is either one which is present from the preceding casting operation or one or several which are present in the supply of the casting installation. The apparatus, in one embodiment, comprises ordinary hoisting means in the form of a crane having a hook which is engaged with the head of the launching rope. Alternatively, the apparatus comprises a car arranged at the platform level and with means at the casting delivery level which forms a cage for the rope which is lifted upwardly to the platform level and placed on the car. The car is then movable along the platform to a position at which the rope may be directed downwardly over a conveyor on the car so that its one end is fed into and through the continuous mold into engagement with the feeding rollers for the casting.

3,817,317

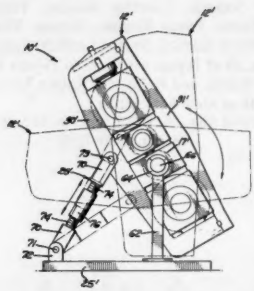
FOUR-HIGH ROLL CASTING MACHINE

Oscar P. Gilmore, Riverside, Calif., assignor to S. J. Collins, Riverside, Calif.

Filed July 20, 1972, Ser. No. 273,471

Int. Cl. B22d *11/06*

U.S. Cl. 164—277 **6 Claims**



A casting machine for continuously producing metal sheet and plate in coils of wide widths, comprising a pair of spaced-apart, parallel casting rolls disposed one above the other and having a feed nozzle discharging molten metal into the space between the revolving rolls. The nozzle is shaped to deliver the molten metal to the proper place for casting, depending upon the angle of the casting machine. The casting rolls are relatively small in diameter, considering their length, in order to make the feed nozzle short and blunt for maximum strength and to reduce the tendency of molten metal to freeze within the nozzle. To prevent the casting rolls from bending outwardly at their midpoints by pressure exerted by the freezing metal which is being reduced in thickness by rolling action of the casting rolls, the latter are backed up by relatively stiff, large-diameter back-up rolls, which press against the casting rolls and prevent them from bending. In the preferred form of the invention, the machine casts downwardly at about a 30° angle, but may be used to cast at any angle from horizontal to vertical.

3,817,318

VESSEL HANDLING APPARATUS FOR CONTINUOUS CASTING MACHINE

Joseph Irwin Greenberger, Pittsburgh, and Joseph James Ciochetto, Allison Park, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 248,117

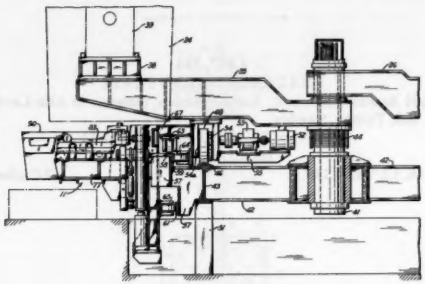
Claims priority, application Great Britain, July 1, 1971, 30833/71

Int. Cl. B22d *11/10*

U.S. Cl. 164—281 **7 Claims**

The disclosure of this invention relates to a continuous casting machine and, more particularly, to an handling apparatus for the interchangeable ladles and tundishes that supply molten metal to the casting machine. The ladles and tundishes are supported on a common vertical central column. Two interchangeable rotatable arms are provided for the ladles that bring them selectively from a receiving position to a pouring position over the mold of the casting machine. The tundishes which are moved selectively into and out of a pouring position are carried by three circular tracks arranged beneath the arms

of the ladles. Each tundish is set in a cradle which is adjustable horizontally and carried by a subframe that is tiltable about a



horizontal axis. The subframe, in turn, is carried by the tracks in an overhung fashion and is both adjustable vertically and rotatable in a vertical plane.

3,817,319

CONDUCTION OF HEAT EXCHANGE FLUIDS

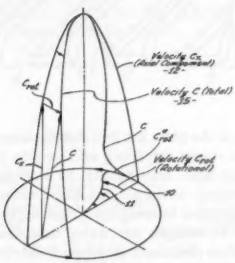
Knut Kauder, Krahenbruch, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed Nov. 14, 1972, Ser. No. 306,181

Claims priority, application Germany, Nov. 15, 1971, 2156578

Int. Cl. F28f *1/20*

U.S. Cl. 165—1 **6 Claims**



The heat transfer between a tube and a fluid therein is to be enhanced by providing a tube with helical corrugation having axial crest-to-crest spacing T, crest-to-valley height *t*, inner diameter *d* and pitch angle of the helix δ. These parameters are selected as follows: *t*/5 from 0.01 to 0.5, preferably between 0.1 and 0.2; T/*d* from 0.01 to 1.0, preferably between 0.03 and 0.3 and helix angle δ from 5° to 20°.

3,817,320

PASSIVE COOLER

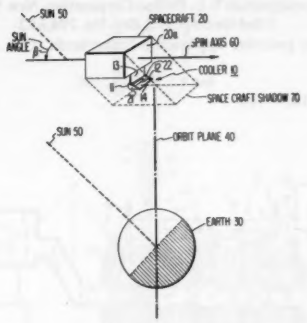
Richard Jean Williams, Marlton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 2, 1971, Ser. No. 120,076

Int. Cl. F24h *3/00*

U.S. Cl. 165—47 **10 Claims**

A passive cooler arranged for three stages of cooling including an outer L-shaped member serving as two of the cooling stages and an inner member serving as the third stage of cooling at a preselected equilibrium temperature. Certain surfaces of each leg of the outer member and an exposed surface of the inner member are each given a surface finish having a spectral response in accordance with certain radiation wavelengths such that the inner member is maintained at a preselected temperature which is lower than otherwise possible when the



cooler is exposed to thermal radiation, the cooler being located in an environment having a temperature lower than the preselected temperature.

3,817,321

COOLING APPARATUS SEMICONDUCTOR ELEMENTS, COMPRISING PARTITIONED BUBBLE PUMP, SEPARATOR AND CONDENSER MEANS

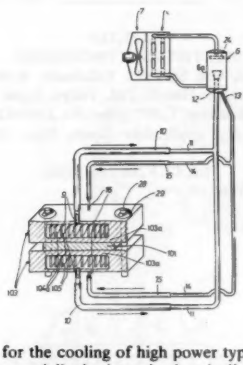
Hans-Ludwig von Cube, Wilhelmsfeld, and Edmund Wagner, Wiesbaden, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 14, 1972, Ser. No. 217,748

Claims priority, application Germany, Jan. 19, 1971, 2102254

Int. Cl. F28d *1/06*

U.S. Cl. 165—105 **18 Claims**

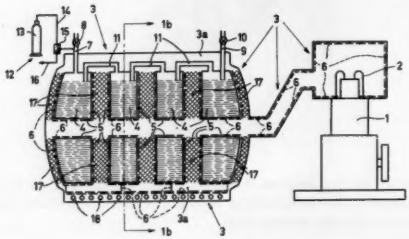


Apparatus for the cooling of high power type semiconductor elements, especially thyristors in electrically powered vehicles, has one or more bubble pumps which are placed into direct heat-exchanging contact with a semiconductor element and are connected with the vessel of a liquid-collecting vapor separator containing a supply of liquid coolant which evaporates at temperatures developing when the semiconductor element is under load and heats the pump or pumps. The separator is connected with an air-cooled condenser, and the condensate is returned to the pump or pumps, either by way of the vessel or by way of an injector which also receives liquid coolant from the separator. Each bubble pump has a current-conducting housing whose chamber is subdivided into several passages having a cross-sectional area which increases in a direction from the liquid-admitting inlet toward the vapor-discharging outlet of the pump.

3,817,322
HEATING SYSTEM

George Albert Apolonia Asselman, and Herman Henricus Maria Van der Aa, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,652
Claims priority, application Netherlands, Oct. 21, 1971, 711447
Int. Cl. F28d 15/00
U.S. Cl. 165—105 8 Claims

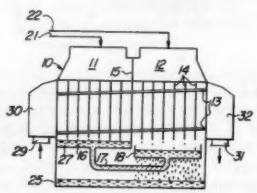


A heating system for a machine having a closed thermodynamic cycle, the system comprising a closed space within which several containers for heat-accumulating material are present as well as a medium transporting thermal energy by evaporation and condensation. The containers communicates with a common supply duct for heat-accumulating material, with spacing members arranged between the walls of the closed space and the containers as well as between the containers mutually.

3,817,323
MULTISTAGE CONDENSERS

Katsuya Ebara, and Sankichi Takahashi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 7, 1973, Ser. No. 338,942
Claims priority, application Japan, Mar. 10, 1972, 47-24019
Int. Cl. F28b 1/02, 9/00
U.S. Cl. 165—110 6 Claims

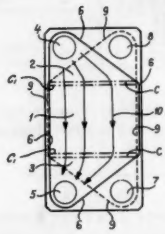


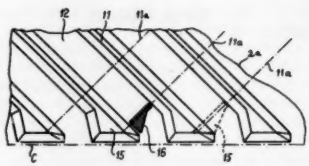
An improvement for sealing a small space between each cooling tube and a tube hole for receiving and supporting the cooling tube formed through a partition wall which divides a shell into a plurality of stages or chambers, in which straight cooling tubes are inclined from a high-pressure chamber to a low-pressure chamber and received and supported in the tube holes with square edges and the condensate flowing along the inclined cooling tube fills the small space between the cooling tube and the tube hole thereby effecting the seal between the high-and low-pressure chambers.

3,817,324
HEAT EXCHANGING PLATE

Jarl Anders Andersson, Lund, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Oct. 24, 1972, Ser. No. 299,643
Int. Cl. F28f 3/02
U.S. Cl. 165—167 2 Claims





Each side of the plate has two distribution surfaces provided with pressed ridges extending side-by-side from an inlet hole and an outlet hole, respectively, to a centrally located main heat exchanging surface, the back sides of the troughs between the ridges forming the ridges on the opposite side of the plate. The troughs are wider than the ridges, so as to reduce the flow resistance along each distribution surface; but this width difference is less at those regions of the distribution surface which are close to said main surface than at other regions of the distribution surface, whereby the contact areas formed by crossing and abutting ridges of adjacent plates in a heat exchanger are greater at said close regions where they must transmit greater forces.

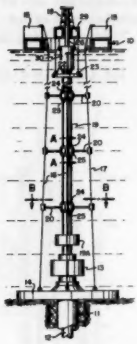
3,817,325
LATERALLY REINFORCED SUBTERRANEAN CONDUIT FOR DEEP WATERS

George E. Mott, and Robert L. Skaggs, both of Metairie, La., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,978
Int. Cl. E21b 7/12
U.S. Cl. 166—.5 1 Claim

The invention relates to a submarine conduit such as a well casing, mud riser or other conductor which extends in a substantially vertical direction between a subterranean well, and a drilling vessel at the water's surface. The conduit is suspended from the floating vessel at one end, and connected to a well

head base. A plurality of flexible tension lines such as steel cables or the like, are stretched parallel to, and adjacent the conduit, which lines are subjected to a constant pulling force. The



lines are further connected to the conduit by a series of brackets, spaced therebetween whereby to laterally support the conduit against displacement by water currents and other forces.

3,817,326

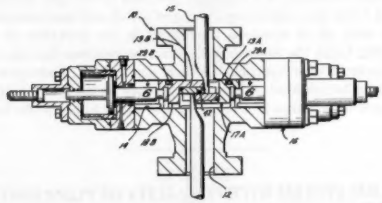
RAM-TYPE BLOWOUT PREVENTER

Maurice J. Meynier, III, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed June 16, 1972, Ser. No. 263,602

Int. Cl. E21b *29/00*

U.S. Cl. 166—55 **29 Claims**



There is disclosed a ram-type blowout preventer for shearing a pipe which may be disposed within its bore and then sealing across the bore.

3,817,327

SUB-SURFACE WELL BLOWOUT PREVENTER OPERATED MECHANICALLY FROM THE SURFACE

Donovan B. Grable, Long Beach, and Bill C. Laney, Torrance, both of Calif., assignors to Hydro-Combo, Inc., Long Beach, Calif.

Filed July 17, 1972, Ser. No. 272,320

Int. Cl. E21b *33/03*

U.S. Cl. 166—72 **8 Claims**

Well flow control apparatus includes a bottom hole pumping string, a stuffing box in the well to seal off about the pumping string and carried by an inner casing string, and an outer casing string. Controlled displacement of the pumping string effects a pack-off between a plug on the pumping string and tubing suspended by the outer casing string below the inner

casing string; and the inner casing string, stuffing box, pumping string, plug and bottom hole pump may all be retrieved while the well is secured against blowout.

3,817,328

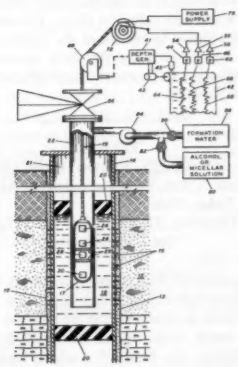
NEUTRON ABSORPTION AND OXYGEN LOG FOR MEASURING OIL CONTENT OF FORMATION

Charles H. Neuman, Placentia, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 21, 1972, Ser. No. 282,618

Int. Cl. E21b *47/00*; **G01t** *1/16*; **G01v** *5/00*

U.S. Cl. 166—250 **10 Claims**



This invention discloses a method for accurately determining changes in the fractional-volume oil and gas content of a reservoir from a cased well bore. The first step of the invention is to record the response of both a thermal-neutron-decay-time log and a neutron activated oxygen log to a reservoir formation traversed by the well bore. A purposeful change is then made in the oil saturation in a given region of the formation surrounding the well bore by injecting fluid under sufficient pressure to displace the connate fluids. This

change can constitute the removal of substantially all the oil or the removal of as much oil as can be displaced by a proposed flooding technique. The combination of the thermal-neutron-decay-time log and the oxygen log is then run again to record the response of the same given region. The difference in the oil content around the well bore is then determined from the differences between the two sets of logs in a manner whose details are described hereinafter. The method can be modified to measure changes in fluid content over long periods by running the combination of the thermal-neutron-decay-time log and the oxygen log when knowledge about current saturations is desired. The oil content between the first and second logging runs can have been changed only by production of fluids from the reservoir.

3,817,329
PROCESS FOR PETROLEUM RECOVERY UTILIZING MISCIBLE FLUIDS

Malcolm R. Rankin, Foster Township, Pa., assignor to Witco Chemical Corporation, New York, N.Y.

Filed July 27, 1972, Ser. No. 275,647
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **9 Claims**

Improved secondary or tertiary recovery techniques are disclosed utilizing as the initially injected slugs oil-external or water-external emulsions containing oxidized or amidized-oxidized products prepared from petroleum hydrocarbons and admixtures of same with untreated hydrocarbons as the oleaginous component.

3,817,330
SECONDARY RECOVERY METHOD

Charles A. Christopher, Houston; Joseph C. Allen, Bellaire, both of Tex., and Jack H. Kolaian, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,334
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **6 Claims**

A novel method of secondary recovery of oil from subterranean reservoirs is provided wherein a fluid is used to drive the oil in the reservoir to production wells. This driving fluid is a mixture of water and colloidal silica. The driving fluid has a mobility ratio relative to the oil in the reservoir such that the driving fluid will maintain a flat face against the oil being driven to production wells and thus a high sweep efficiency of the reservoir will result.

3,817,331
WATERFLOODING PROCESS

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Dec. 22, 1972, Ser. No. 317,553
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **4 Claims**

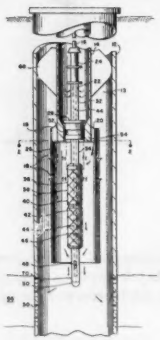
One of the difficulties in present methods for using surfactants to improve waterflood efficiency is that their movement through the rock is slow relative to the rate of water movement. As a result, these agents do not remain at the flood front. In addition, the bank of connate water ahead of the flood front prevents the surfactants from reaching the oil-water interface. The present invention overcomes this difficulty by injecting gas in proper volume to move through the injected and connate water bank to the oil-water interface, carrying the surfactant with it. This gas purging method is also considered to be of value in collecting and producing dispersed oil associated with and left by other surfactants, wetting agents and oil solvents.

The present invention relates to a method for the recovery of oil from underground deposits thereof. More particularly, it is concerned with an improved waterflooding technique for oil recovery.

3,817,332
METHOD AND APPARATUS FOR CATALYTICALLY HEATING WELLBORES

Holland J. Berry; William C. Hardy, and Dale W. Zadow, all of Dallas, Tex., assignors to Sun Oil Company, Dallas, Tex.

Division of Ser. No. 92,836, Nov. 25, 1970, Pat. No. 3,712,375, which is a continuation-in-part of Ser. No. 889,059, Dec. 30, 1969, abandoned. This application Sept. 1, 1972, Ser. No. 285,781
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 **27 Claims**



A catalytic heater is used in supplying heat to wellbores and has a catalytic surface open to the wellbore for contacting and causing the reaction of a fuel mixture. The preferable catalytic material is platinum supported on a matrix of asbestos, asbestos-burlap, ceramic, or other non-combustible material. Air and fuel gas is injected into the wellbore to contact the catalyst. Initiation of a catalytic reaction is brought about by use of a fuel gas containing hydrogen which will spontaneously react with air at standard conditions in the presence of the catalyst. Once the hydrogen-air reaction reaches the reaction temperature of a hydrocarbon fuel gas and air, hydrogen injection is terminated. A carrier fluid may be used to transport the heat of reaction to a formation or other appropriate location.

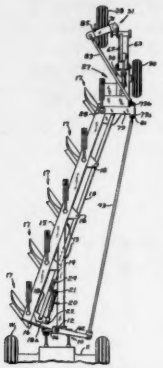
3,817,333
PLOW SYSTEM WITH PLURALITY OF PLOW UNITS AND MEANS FOR ADJUSTING SPACING BETWEEN UNITS IN A CONTINUOUS MANNER

Jon E. Kinzenbaw, Ladora, Iowa, assignor to Dietrech Manufacturing, Inc., Goodfield, Ill.

Filed Feb. 16, 1972, Ser. No. 226,903
Int. Cl. A01b *69/00*
U.S. Cl. 172—283 **9 Claims**

A plurality of plow units are mounted to a main frame of a plow system for rotation about their vertical axes. The plow units are spaced at equal lateral increments and at uniformly increased distances from a pivot connection between the main frame and a traction vehicle. The plow units are ganged together by means of a guide beam; and a power actuator controls the motion of the guide beam in rotating the plow units so that their cut lines take a predetermined position relative to the main frame. As the plow system is then used to plow ground, the main frame swings about its pivot connection to the tractor until the plow units line up with the direction of travel of the tractor, thereby adjusting the spacing between plow units automatically. The rear plow unit is mounted to a tail section which is pivotally mounted to the main frame and

includes a rear wheel for supporting the distal end of the main frame and for steering the system as the tractor turns. A



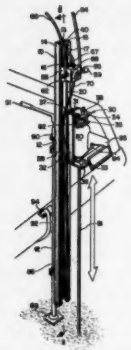
second power actuator is adapted to lift the main frame relative to the rear wheel for adjusting plow depth or pulling the system over ground without plowing it.

3,817,334

HYDRAULICALLY OPERATED PORTABLE BORING DRILL

Henry Bolt, Elmhurst, Ill., assignor to Inland Equipment Company, Addison, Ill.

Filed July 17, 1972, Ser. No. 272,344
Int. Cl. E21c *5/11*
U.S. Cl. 173—23 **3 Claims**



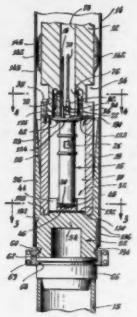
There is disclosed a vehicle-mounted portable, hydraulically advanced earth boring drill, including a guide track, a movable carriage carried by and movable with respect to the guide track, a piston member mounted on the movable carriage and movable in response to pressure applied thereto, a support housing mounted on the movable carriage and having a drill carried thereon, the piston member being contained within a cylinder in fluid communication with a hydraulic fluid system, a removably engageable vehicle attachment mount carried by the guide track for accommodating the attachment of the apparatus to a vehicle and a counterbalancing support foot mounted on the guide track for counterbalancing the apparatus against the underlying support surface and the vehicle during use.

3,817,335

AIRGUN REPEATER POWERED PILE DRIVER

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Filed Nov. 28, 1972, Ser. No. 309,995
Int. Cl. E02d *7/10*
U.S. Cl. 173—127 **10 Claims**



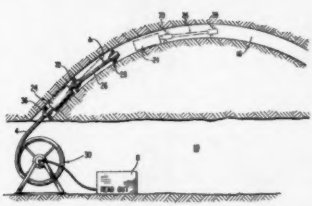
An airgun repeater powered pile driver embodying the present invention is capable of driving piles of various types and sizes including immense piles to be driven down into the earth and can be operated totally submerged, partially submerged or entirely in the air. A first driving impulse down upon the pile commences when the airgun repeater is fired into a discharge chamber and continues for a relatively long time interval while the discharge chamber wall of great strength remains effectively telescoped within a closely surrounding sleeve as the massive weight above the airgun moves upwardly. Thereafter, the released high pressure gas intermixed with water can escape upwardly between the rim of the discharge chamber wall and the surrounding sleeve. A second driving thrust is provided when the rim of the discharge wall impacts down with respect to a driving head at the bottom of the surrounding sleeve. The pile driver can also be operated within the bore of very large diameter piles.

3,817,336

METHOD AND APPARATUS FOR DETERMINATION OF ORE SAMPLING LOCATION

Howard V. Sears, P.O. Box 123, Flat River, Mo. 63601

Continuation-in-part of Ser. No. 25,885, is a division of Ser. No. 685,671, Nov. 24, 1967, Pat. No. 3,571,937. This application Jan. 21, 1972, Ser. No. 219,813
Int. Cl. E21b *7/04*
U.S. Cl. 175—61 **12 Claims**



A sensing device which defines the terminal position and inclination of a curved prospect hole drilled from a passage in a mine by indicating the distance, slope and deflection, from initial position and azimuth, of progressive points along the hole.

An in-hole sensor is provided with a plurality of potentiometers mounted on mutually perpendicular axes to which are attached pendulums. Anglar changes in inclination and attitude of the sensor with reference to the pendulum's vertical position cause related electrical outputs from the potentiometers which can be read as degrees by a readout instrument. Other potentiometers therein have their electrical outputs altered to an extent proportional to the deflection of the hole.

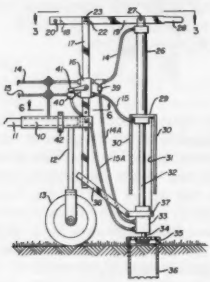
According to the method of the invention cross-section samples may be taken from the ground surrounding and in the plane of mine workings by drilling curved prospect holes from within existing mine openings.

3,817,337

MACHINE FOR MAKING HOLES IN PUTTING GREENS

Philip F. Panak, and Elwin J. Bronson, both of Rt. No. 2, Kinsman, Ohio 44428

Filed Sept. 8, 1972, Ser. No. 287,547
Int. Cl. E21b *19/08*
U.S. Cl. 175—162 **3 Claims**



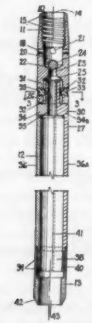
A machine for making holes in putting greens positions a vertically movable rotatable cutting cylinder for manual and hydraulic operation. Controls for hydraulic fluid supplied the device act to move the cutting cylinder downwardly until the action is resisted whereupon the cutting cylinder is revolved. Stripping means mounted in the cutting cylinder eject a plug of turf and dirt therefrom when the cutting cylinder is elevated.

3,817,338

HEAVY DUTY SOIL SAMPLER

George W. Guest, Benton Township, Lackawanna County, Pa., assignor to Sprague & Hernwood, Incorporated, Scranton, Pa.

Filed Mar. 1, 1973, Ser. No. 337,082
Int. Cl. E21b *9/16, 25/00, 27/00*
U.S. Cl. 175—239 **6 Claims**



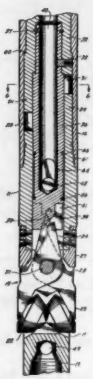
A heavy duty soil sampler is provided which includes a driving head that is detachably connected to a split plug which is fixedly secured to a hollow split barrel with the head and plug retained together by set screws engaged in a groove in the plug. The barrel is held together at the lower end by a hollow shoe in threaded engagement therewith.

3,817,339

UNDERREAMER

John H. Furse, Cerritos, Calif., assignor to The Servco Company, Long Beach, Calif.

Filed Jan. 12, 1973, Ser. No. 323,125
Int. Cl. E21b *43/16*
U.S. Cl. 175—271 **29 Claims**



A hole drilling tool, useful in mining operations for enlarging the lower portion of a hole for explosives, is described. This underreamer has arms movable between a retracted position and an extended position for underreaming in response to weight of the drill string above the tool. The two cutter arms are urged outwardly into their extended position by a cam connected to the upper end of the drill string. In effect the cutter arms are connected to the lower end of the drill string which can telescope relative to the upper end. The pivot pin for the cutter arms is hollow for bypassing a portion of compressed air to the cutter for cooling while another portion of the air passes in parallel to the lower portion of a drill string.

A latching selector sub is connected serially with the underreamer for latching the cutter arms in their retracted position in response to fluid pressure within the drill string. The selector sub permits collapse of the telescoping underreamer when telescoping force is applied prior to fluid pressure. Conversely telescoping is prevented and the cutter arms are retained in their retracted position when fluid pressure is applied prior to the application of telescoping force.

3,817,340

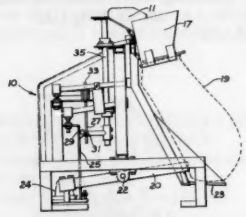
APPARATUS FOR DISPENSING PREDETERMINED QUANTITIES OF MATERIAL INTO CONTAINERS

Leonard Charles Peasnall, Warrington, England, assignor to Agricultural Utilities (Machinery) Limited

Filed May 29, 1973, Ser. No. 364,760
Int. Cl. G01g *13/22*
U.S. Cl. 177—90 **3 Claims**

A weighing machine comprises two pivoted platforms disposed in a side by side manner with the front ends of the platforms being adapted to receive sacks or containers. The rear ends of the platforms each carry weights of a known mass and are connected by a rocking linkage to a feed chute which is rotated between alternate positions by the rocking linkage

so that the feed chute feeds material alternately into the sacks or containers. The change over of the feed chute is effected by



one of the platforms being tilted when a sack or container thereon approaches and equals the known mass.

3,817,341

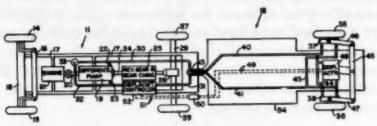
HYDRAULIC DRIVE FOR TRUCKS, TRAILERS AND TRUCK-TRAILER COMBINATIONS

Clarence Kirk Greene, 100 N. Arlington Ave., Reno, Nev. 89501

Filed Oct. 17, 1972, Ser. No. 298,366

Int. Cl. B60k *17/14*; **B60d** *1/08*

U.S. Cl. 180—14 D **17 Claims**



A truck, coupled to one or more trailers, has a differential pump driven by the truck's power plant, the pump including an output shaft mechanically coupled to a truck driving wheel, fluid outlet and inlet ports, mechanical reacting means for driving the output shaft at a speed which varies inversely with the quantity of fluid flowing through the pump, (preferably the pump having a by-pass valve for replacing a mechanical clutch), and one or more hydraulic motors on the trailer connected by conduits through coupling means to the truck and pump. The motors may be of variable, positive displacement, controlled from the truck, so that when the displacements are zero no torque is applied to the trailer; or they may be fixed displacement and connected to valves which alter the flow route to vary the effective motor displacement. Thereby the trailer can be started on poor ground, can drive the truck engine in compression, and can maintain tension on the mechanical coupling. A truck towing several trailers is disclosed.

3,817,342

MOTORCYCLE BRAKES

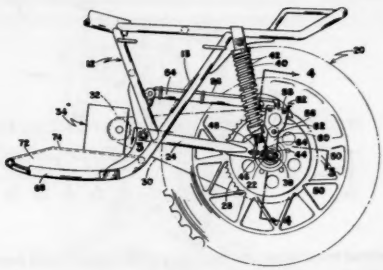
Mark H. Hamilton, Hancock, N.H., assignor to Rokon, Inc., Keene, N.H.

Filed May 14, 1973, Ser. No. 360,383

Int. Cl. B60t *1/06*

U.S. Cl. 180—32 **10 Claims**

A motorcycle including a frame, a rear wheel having an axle, a pair of trailing suspension arms pivotally mounted on the frame for simultaneous pivotal movement about a transverse axis and a pair of resiliently compressible suspension elements extending from the free ends of the suspension arms upward to the frame. There is provided a rear wheel brake assembly comprising a brake disk mounted on the wheel, a brake caliper element assembly and a caliper element assembly arm pivotally mounted on the frame above and spaced from one of the trailing suspension arms and generally parallel thereto, the brake caliper element assembly being mounted on the free end of the caliper element arm extending downwardly therefrom for cooperation with the upper portion of the brake



disk. A positioning radius link is pivotally connected to the brake caliper element assembly adjacent the lower end thereof, extending downwardly therefrom and pivotally connected to the axle for positioning the caliper element.

3,817,343

INSTALLATION FOR BRAKE OF MOTOR VEHICLES WHICH ARE DRIVEN FROM A GAS TURBINE

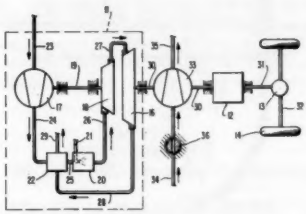
Gunther Albrecht, Pullhausen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed May 20, 1971, Ser. No. 145,434

Claims priority, application Germany, May 21, 1970, 2024792

Int. Cl. B60k *3/00*

U.S. Cl. 180—66 R **30 Claims**



An installation for the braking of motor vehicles which are driven from a gas turbine with a free working turbine by means of a rotary compressor which is arranged either in the power transmission path from the free working turbine to the driven wheels or in parallel thereto.

3,817,344

APPARATUS FOR CONTROLLING VEHICULAR SPEED AND INTERSPACING

Tetsumasa Asano; Hiroshi Takamiya, and Yoshinobu Morimoto, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 292,104

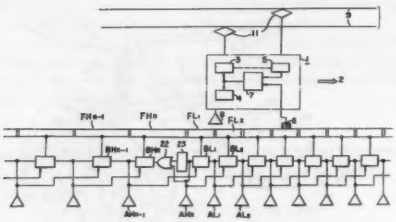
Claims priority, application Japan, Sept. 23, 1971, 46-74310; Oct. 23, 1971, 46-84200; Oct. 29, 1971, 46-86128; Oct. 28, 1971, 46-85859; Oct. 28, 1971, 46-85858

Int. Cl. B60t *7/18*

U.S. Cl. 180—98 **10 Claims**

A fail-safe system, having both digital and analog embodiments, which controls the spacing and speed of vehicles traveling along a prescribed track, path or roadway. In accordance with the system, the position of a particular vehicle

is detected by ground mounted elements which sense the passage of a vehicle. This information is retained in a memory until it is erased by the passing of a subsequent vehicle. In addition, information as to the position of the vehicle is transmitted back along the track over a suitable circuit network to following vehicles to regulate the speed and spacing of all vehicles running on the same track. The system also provides for high speed and low speed zones, and for junction zones between the high and low speed zones.



3,817,345

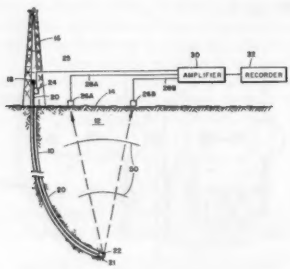
CONTINUOUS BIT POSITIONING SYSTEM

John R. Bailey, Tulsa, Okla., assignor to Senturion Sciences, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 167,573, July 30, 1971, Pat. No. 3,739,871. This application June 18, 1973, Ser. No. 371,142

Int. Cl. G01v

U.S. Cl. 181—.5 NP **3 Claims**



This abstract describes a system by means of which the precise position of the drill bit, in three dimensions, in the earth, can be determined during the drilling operation with a minimum of effort and interruption to the drilling process. It provides placing a motion sensor on the drilling apparatus, and a plurality of vibration sensors or geophones, positioned in a two-dimension array on the surface of the earth, above the expected position of the drill bit. To make a measurement from which can be determined the position of the bit, the drill stem is raised a selected distance and suddenly released, so that it will fall in the borehole, and the bit will strike the bottom of the hole. This impact will cause an elastic wave to be generated at the bottom of the borehole. The elastic wave will be transmitted through the earth as a spherical wave upward to the surface, and will be detected by the geophones. The sensor at the drilling apparatus determines the instant at which the drill pipe starts to fall, from which time can be calculated, knowing the length of the drill pipe, the time when the bit strikes the bottom of the drill hole. This determines the initiation time of the elastic wave. The arrival times at the geophones of the elastic wave can be measured, and the position at which the elastic wave originated can be determined.

3,817,346

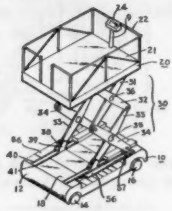
MOBILE SCAFFOLDING

Donald T. Wehmeyer, 276 Mountain Cir., Fountain Valley, Calif. 94517

Filed Aug. 21, 1972, Ser. No. 282,157

Int. Cl. E04g 1/22

U.S. Cl. 182—14 **17 Claims**



There is disclosed a mobile scaffolding which is powered by self contained electrical storage batteries. The electric drive is mechanically linked to the lift mechanism of the scaffolding by mechanical means comprising screw means and a mating nut means interconnected by rolling means to provide a high efficiency coupling. The lift mechanism employs very compact spring means which is biased to extend the lift mechanism from its contracted position to provide a force that supplements the electric drive when the mechanism has the most unfavorable lever moment for extension of the scaffolding. The unit has a self contained power means for mobility and a self contained directional control means with remote control means whereby the entire unit can be controlled from the scaffolding platform with a single lever that actuates the lift, drive and steering motors.

3,817,347

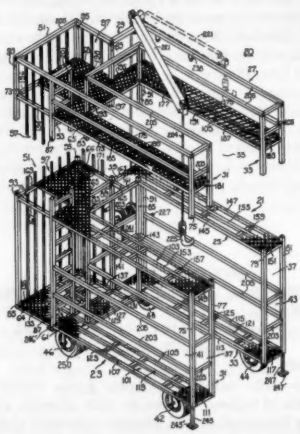
U-FRAME SCAFFOLDING ASSEMBLY

Owen C. Spencer, 128-32 Racine St., Calumet Park, Ill. 60445

Filed May 24, 1973, Ser. No. 363,513

Int. Cl. E04g 1/14

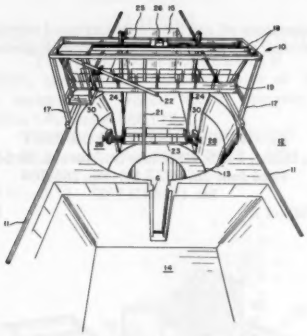
U.S. Cl. 182—115 **14 Claims**



A novel scaffolding assembly is provided for use in placing and working with construction materials to be arranged to have a substantial height dimension and includes a U-shaped framework having an open-ended interior work area, a plurality of parallel stacked platform surfaces providing substantially

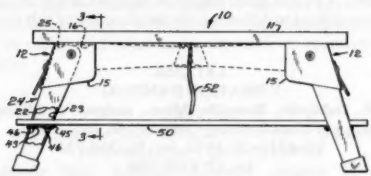
full accessibility to the construction materials, ladder means for gaining access to the platform surfaces and lifting means removably positioned on the framework for lifting the construction materials. The entire framework is mounted on support wheels and can be assembled and disassembled on a job site. The framework can be removed from a vertically formed column reinforcement matrix without the need to disassemble the framework.

3,817,348
REFUELING BRIDGE WITH SERVICE ELEVATOR FOR WELL WALL MAINTENANCE
Cecil Roy Jones, Orange, Conn., assignor to Transfer Systems Incorporated, North Haven, Conn.
Filed July 10, 1972, Ser. No. 270,232
Int. Cl. E04g *3/00*
U.S. Cl. 182—142 **9 Claims**



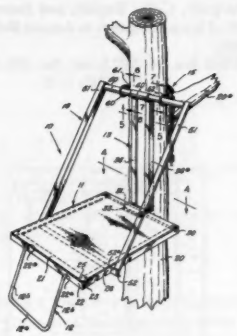
An improved refueling bridge superstructure comprising a service elevator for personnel access to the reactor well of a nuclear reactor is described. The service elevator is provided with end extensions laterally movable relative to its personnel platform, and power driven brushes are mounted on the end extensions such that they can be brought into cleaning engagement with the walls during a wall cleaning, decontamination, maintenance procedure.

3,817,349
COLLAPSIBLE SAW HORSE
Ray L. Barthel, 11017 S. Parkside, Chicago Ridge, Ill. 60644
Filed Oct. 23, 1973, Ser. No. 408,391
Int. Cl. F16m *11/00*
U.S. Cl. 182—155 **10 Claims**



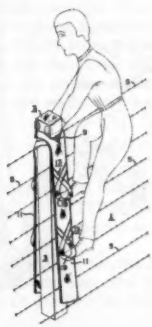
A saw horse designed to provide a secure work position in the legs extended position and also a legs folded or collapsed position for convenient storage. The saw horse includes a pair of latches with each latch constructed to lock a pair of legs to each other and to the saw horse to prevent collapse of the saw horse under varying loads and lateral shocks.

3,817,350
PORTABLE SPORTMAN SEAT
Zane P. Gray, Rt. 5, Box 307A, Greenville, Tex. 37743
Filed Feb. 12, 1973, Ser. No. 331,489
Int. Cl. A47c *9/10*
U.S. Cl. 182—187 **2 Claims**



A portable seat device for use particularly in trees by hunters and the like including a body supporting seat, a foot support connected to the forward edge of the seat to support the feet of the user, a first support frame hinged at a lower end along the back edge of the seat for engaging the surface of a tree trunk or other supporting column, a second support frame pivoted at an upper end with the upper end of the first support frame and extending downwardly and outwardly at an angle with a lower end selectively engageable in selected pairs of slots of the seat for supporting the seat at a desired angle, and a chain assembly secured with the upper end of the second support frame for securing around a tree trunk above a limb extending from the truck to hold the seat on the tree. The seat is fully collapsible for carrying and may be quickly secured with any tree or other somewhat vertical column having a generally horizontal member such as a limb. The seat inclination may be adjusted to compensate for variations in the vertical angle of the tree or other supporting column.

3,817,351
PORTABLE STILE
Vernon E. Mikkelson, 3082 Horseshoe Ct., Hayward, Calif. 94541
Filed May 10, 1973, Ser. No. 359,092
Int. Cl. E06c *1/52*
U.S. Cl. 182—190 **6 Claims**



The invention relates to a portable stile for scaling fences, involving a panel adapted to be suspended about the upper

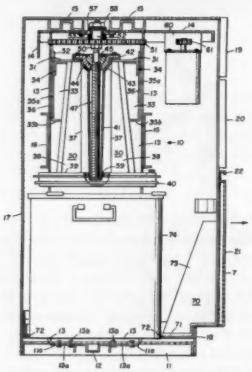
end of a fence post and having affixed thereto the plurality of loops, each providing a foot hold to enable one to climb up and over a fence.

3,817,352

LUBRICATING MEANS FOR TRASH COMPACTOR RAM

Joseph F. Bourgeois, Cedar Rapids, and James M. Grace, Elberton, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Jan. 24, 1973, Ser. No. 326,431
Int. Cl. B30b 1/18
U.S. Cl. 184—5 4 Claims



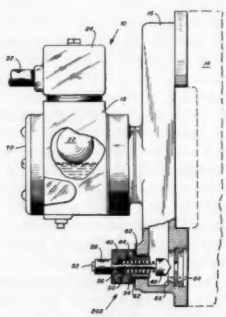
A trash compactor employs a single, vertically disposed screw which drives the ram. In order to keep the screw lubricated over long periods of life, it operates in a tube partially filled with suitable lubricant, whereby the action of the screw threads keeps them and associated parts well lubricated and quiet over long periods of time.

3,817,353

OIL LEVEL CONTROL SYSTEM HAVING HIGH TEMPERATURE ACTUATED SHUT-OFF VALVES

Kenneth N. Mills, 3865 S. Florence Ave., Tulsa, Okla. 74105

Filed June 25, 1970, Ser. No. 49,641
Int. Cl. F01m 11/10; F16k 17/38
U.S. Cl. 184—6.4 1 Claim



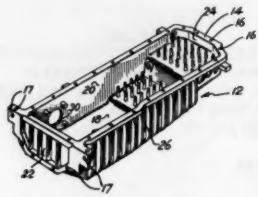
An oil level control device for controlling the level of oil in an engine crankcase incorporates thermoactuated shut-off valves for abrogating oil leakage in the event of a fire.

3,817,354

OIL PAN FOR TRACTORS

Elmo R. Meiners, Anchor, Ill., assignor to M & W Gear Company, Gibson City, Ill.

Filed June 1, 1972, Ser. No. 258,512
Int. Cl. F01m 5/00
U.S. Cl. 184—104 B 3 Claims



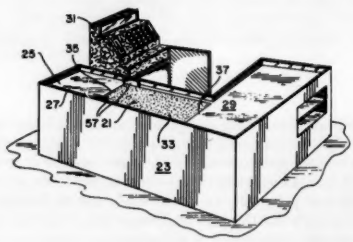
A cast aluminum oil pan having an increased volume and including external fins and internal projections is provided for a tractor.

3,817,355

SINGLE-DRUM CONVEYOR BELT

Charles A. Haase, 246 S. Gladstone St., Aurora, Ill. 60506

Filed June 26, 1972, Ser. No. 266,204
Int. Cl. A47f 9/02
U.S. Cl. 186—1 A 15 Claims



A power-driven conveyor belt utilizes a single drum coupled to an electric motor for transporting articles from a loading station to a receiving station, frictional contact of the belt against the drum, such as is required for driving the belt, being provided by a stationary first resilient member disposed upstream of the drum and a second stationary resilient member disposed downstream of the drum and in transverse relationship with the periphery thereof, the two resilient members cooperating to hold the belt in frictional driven contact with the drum. A pair of guide members disposed upstream of the drum are utilized to define the precise direction of belt travel.

3,817,356

VIBRATION DAMPING

Carl A. Dahlquist, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 29, 1973, Ser. No. 364,734
Int. Cl. F16f 7/08
U.S. Cl. 188—1 B 4 Claims

A method of damping vibrations in a steel panel which is subject to destructive or annoying vibrations. A vibration damping sandwich comprising a sheet of a flexible magnetic material and a flexible ferromagnetic sheet coextensive with one face of the flexible magnetic sheet is placed with the exposed face of the magnetic sheet against the steel panel to cover at least one-tenth of the surface area of the panel. The

damping sandwich has sufficient flexibility and magnetic strength to conform to the steel panel and to maintain intimate

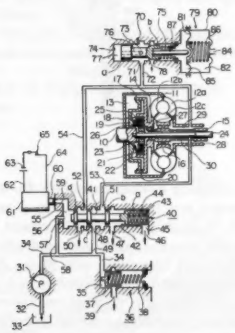
contact therewith to damp vibrations in the panel through frictional sliding between the panel and the layers of the damping sandwich and within the damping sandwich.

3,817,357

TORQUE CONVERTER WITH THROTTLE CONTROLLED FLUID CLUTCH

Yoichi Mori, and Hirohisa Ichimura, both of Yokohama, Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Mar. 20, 1972, Ser. No. 236,133
Claims priority, application Japan, Oct. 12, 1971, 46-79897
Int. Cl. F16d *39/00*
U.S. Cl. 192—3.33 **3 Claims**



A hydraulic control system for controlling a hydraulic clutch incorporated in a torque converter in a motor vehicle driveline. The control system applies a hydraulic pressure to the torque converter chamber so as to engage the clutch, the hydraulic pressure being modulated in accordance with the intake manifold vacuum or the throttle opening. The clutch is therefore softly engaged when the engine torque is small and quickly and powerfully engaged when the engine torque requirement is large, so that, smooth and strong engagement of the clutch is effected under any mode of operation of the engine.

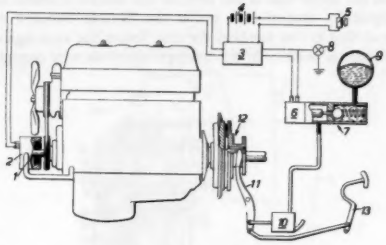
3,817,358

SYSTEM FOR DISENGAGING A CLUTCH IN THE TRANSMISSION OF A VEHICLE

Wolfgang Hess, Koblenz, Germany, assignor to Girling Limited, Tyseley, Birmingham, England

Filed Nov. 10, 1972, Ser. No. 305,218
Claims priority, application Great Britain, Nov. 23, 1971, 54266/71
Int. Cl. F16d *23/00, 43/24*
U.S. Cl. 192—.033 **6 Claims**

In a system for disengaging a clutch in a vehicle transmission a sensor provides a control unit with an electrical output related to the speed of the vehicle engine, and the control unit is arranged to send an operating signal to clutch disengaging



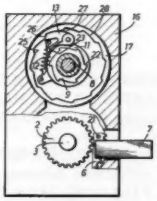
means when the deceleration of the engine exceeds or its speed falls below a predetermined value.

3,817,359

SINGLE OR MULTIREVOLUTION PAWL CLUTCH

Gunter Haupt, Grestetten/Wuttemburg; Edwin Lassle, Langenau, and Karl-Heinz Heisele, Oberstotzingen, all of Germany, assignors to Walther Bueromaschinen GmbH, Gerstetten, Germany

Filed May 2, 1973, Ser. No. 356,360
Claims priority, application Germany, May 3, 1972, 2221532
Int. Cl. F16d *67/06*
U.S. Cl. 192—17 C **6 Claims**



A single or multirevolution pawl clutch for coupling rotating transfer systems comprises driving and driven shafts mounted in a housing and a pawl mounted on the driven shaft. A stationary ratchet ring surrounds the driven shaft and has teeth thereon engageable by the pawl. A driving member is drivingly connected to the driving shaft by gearing and has teeth thereon engageable by the pawl which is urged into engagement with the driving member by a spring. A magnetic coil can be energized by pulse signals so that upon energization the pawl is magnetically attracted into engagement with the ratchet ring such that the driven shaft is disengaged and upon the energization the pawl is engaged with the driving member under the action of the spring to engage the driven shaft.

3,817,360

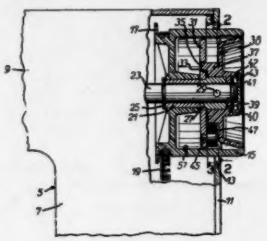
CAM OPERATED DEVICE FOR CONNECTING BALANCE WHEEL AND MAIN SHAFT IN SEWING MACHINES

Nereo Bianchi, Pavia, Italy, assignor to Necchi Societa per Azioni, Pavia, Italy

Filed Dec. 11, 1972, Ser. No. 313,795
Claims priority, application Italy, Jan. 26, 1972, 42901/72
Int. Cl. F16d *11/06, 23/12*
U.S. Cl. 192—78 **1 Claim**

A device for connecting the balance wheel of a sewing machine with the main shaft in which a metallic disc within a cylindrical-surface of the balance wheel is rigidly connected

with the main shaft, a U-shaped flexible element connected in its lower part with said disc, a U-shaped spring within the flexible element and secured thereto by two tongues engaging two slots on the upper end of the arms of the flexible element and an elliptically shaped cam inside the flexible element and spring so that in one position the cam forces the arms against the cylindrical surface of the balance wheel thereby engaging



the main shaft with the balance wheel and in the other position the arms are spaced from the cylindrical surface of the balance wheel as a result of the action of the spring so that the main shaft is disengaged from the balance wheel. The positions of the cam are delimited by the opposite ends of a circumferential groove on the disc and engaged by a tooth provided on the front part of the cam.

3,817,361

HANDLE OPERATED CRANK DEVICE WITH FREEWHEEL MECHANISM

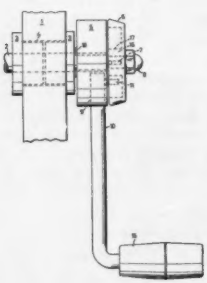
Harald Oskar Lundqvist, P.O. Box 33, Ch-6037 Root/Lucerne, Switzerland

Filed Feb. 1, 1973, Ser. No. 328,577

Claims priority, application Sweden, Feb. 3, 1972, 1282/72

Int. Cl. F16d *19/00, 23/14;* **G05g** *5/06*

U.S. Cl. 192—95 **4 Claims**



A handle operated crank device comprising a drive shaft, a crank lever provided with a handle, means for rotatably journalling the free end portion of the crank lever in a hub which is rotatably journalled on said drive shaft, an impeller member secured to the drive shaft, and a projection on said crank lever, said projection and said handle extending perpendicular to the crank lever and in one and the same plane, and said projection being adapted to engage said impeller member when the handle of said crank lever is directed substantially in parallel to said drive shaft.

3,817,362

TORSION DAMPING DEVICE

Michel Rist, Boulogne, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed Nov. 14, 1972, Ser. No. 306,433

Claims priority, application France, Nov. 29, 1971, 71.42623

Int. Cl. F16d *3/14, 47/02*

U.S. Cl. 192—106.1 **8 Claims**

A torsion-damping device, especially for a clutch friction-disc, for coupling together two parts for rotation with a relative elastically-braked angular displacement, one of the said parts comprising a central plate provided with passage means, while the other part comprises side plates disposed on each side of the central plate and interconnected by spacing members passing through the passage means with an angular clearance defining said displacement in both directions, windows being formed facing each other in the said plates and being intended to receive torsion-damping springs for coupling the plates together in rotation, while offering an elastic resistance to the said displacement, some of the windows facing each other in the central plate and in the lateral plates having different angular lengths in order to cause the corresponding spring to act only after part of the displacement, so as to obtain a progressive variation of the torque as a function of the displacement. High transmissible torque and good progressivity are obtained by increasing the number of windows and arranging the spacing members and/or their passage means closer to the axis of rotation than the windows. In an alternative form, the said passage means are constituted by radial extensions of certain windows in the central plate towards the axis of rotation.

3,817,363

CARDING MACHINE CLEAN OUT SAFETY DEVICE

Thomas A. Wigington, Jr., Anderson, S.C., assignor to Dodd Metal Works, Inc., Anderson, S.C.

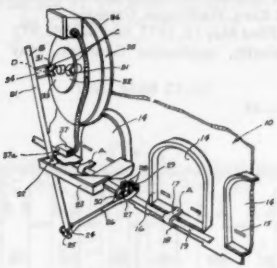
Filed Oct. 16, 1972, Ser. No. 298,031

Int. Cl. F16p *3/08*

U.S. Cl. 192—135 **2 Claims**

A device for preventing access to the area beneath the main cylinder of a carding machine except when the main cylinder

has ceased to rotate includes linkage having a handle or operator which is forced as a result of rotation of the main cylinder



to an operating position maintaining the linkage in position to obstruct such access.

3,817,364

FLOATING PLATFORM FROM WHICH TO START WATER SKIING

Paul L. Cormier, Spencer, Mass., assignor to Aqua Ski Launch Corp., Ware, Mass.

Filed Mar. 27, 1972, Ser. No. 238,043The portion of the term of this patent subsequent to Mar. 17, 1990, has been disclaimed.

Int. Cl. B65g *11/00;* **A63g** *21/00*

U.S. Cl. 193—2 R **9 Claims**

An apparatus to facilitate the take-off on water skis including flotation gear to support the skier at the water level for starting and having a seat or positioner associated with ski guides to initially establish a proper position and attitude of the skier relative to the skis and the water's surface.

3,817,365

AUTOMATIC PRINT HEAD SHIFTING DEVICE

Norbert Zimmermann, Nurnberg, Germany, assignor to Triumph Werke Nurnberg A.G., Postfach, Germany

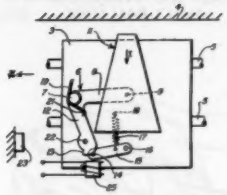
Filed May 30, 1973, Ser. No. 365,130

Claims priority, application Germany, Aug. 9, 1972, 2239117

Int. Cl. B41j *9/20*

U.S. Cl. 197—1 R **4 Claims**

Automatic shifting mechanism is provided to shift a pin matrix type head normally positioned closely spaced from a printing plane during printing to a retracted position away from the printing plane during carriage return movement of a



carriage supporting the printing head. Movement of the printing head from printing and retracted positions is controlled by carriage limit position.

3,817,366

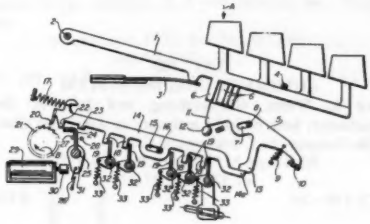
KEYBOARD CONTROLLED ENCODING MECHANISM

Rudolf Blum, Nuernberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuernberg, Germany

Continuation of Ser. No. 98,565, Dec. 16, 1970, abandoned. This application Nov. 21, 1972, Ser. No. 308,623

Int. Cl. B41j *23/02*

U.S. Cl. 197—16 **12 Claims**



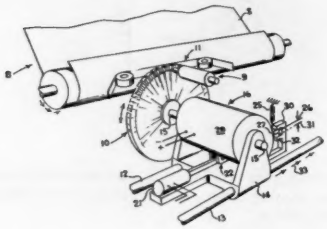
A keyboard controlled encoding mechanism employs a continuously rotating snatch roll to drive translatable interposers which, when driven, operate code selector bails. The interposers are normally biased toward engagement with the snatch roll but are held latched by release levers rockably responsive to key depression. A rocked release lever releases its associated interposer and moves into a ball lock precluding depression of a second key. The release lever is held in the ball lock by its interposer until moved out incident to movement of its associated interposer to a limit. During movement of the interposer to its limit a code for processing will be generated. The same movement of the interposer moves the release lever to a position where it can relatch its interposer. The movement of an interposer also positions a bistable blocking bail to preclude engagement of another interposer which however can be unlatched by its associated release lever and placed in readiness or memory as soon as the first release lever leaves the ball lock. The interposer in memory immediately moves into engagement with and is driven by the snatch roll as soon as the blocking bail is restored in response to a signal from the system acting on or processing the code generated.

3,817,367

HIGH SPEED PRINTER

Herbert Tramposch, Riverside, and David W. Hubbard, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Sept. 1, 1972, Ser. No. 285,845
Int. Cl. B41j 23/04
U.S. Cl. 197—18 3 Claims



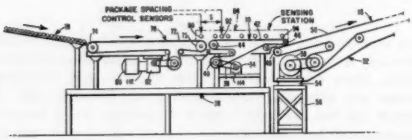
A high speed printer having a disc type matrix that is adapted to be rotatably driven to a plurality of selected print positions by means of a differential unit that includes two separate input motors. The simultaneous operation of these two motors is operative to decrease the average time required to selectively index the type matrix to said print positions and thus enables the printer to attain higher operative speeds.

3,817,368

AUTOMATIC LOADING SYSTEM

Edward A. Wentz, Gaithersburg, and John H. Swam, Manchester, both of Md., assignors to American Chain & Cable Company Inc., Bridgeport, Conn.

Filed Sept. 8, 1972, Ser. No. 287,518
Int. Cl. B65g 47/42
U.S. Cl. 198—21 8 Claims



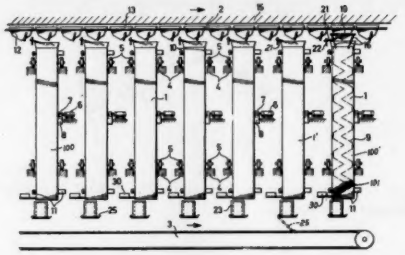
Packages delivered at random are automatically positioned on a loading conveyor by signal controlled interruption in its movement to discharge the packages onto a continuously moving sorting conveyor at a fixed center to center relationship regardless of package length. Photo-sensing devices detect the presence of packages approaching and at spaced locations along the loading conveyor to limit the spacing between packages and synchronize transfer of the packages to trays on the sorting conveyor regardless of package length by delays in synchronizing signals from the sorting conveyor causing said interruption in loading conveyor movement.

3,817,369

APPARATUS FOR PROCESSING AND STORING ROD-SHAPED DOUGH

Eberhard Bluthardt, Stuttgart; Werner Hoschele, Beutelsbach, and Walter Spinner, Backnang, all of Germany, assignors to Hofliger & Karg, Waiblingen, Germany

Filed May 10, 1972, Ser. No. 251,973
Claims priority, application Germany, May 18, 1971, 2124487
Int. Cl. B65g 13/02
U.S. Cl. 198—44 10 Claims



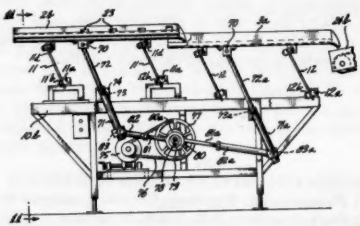
Spaghetti, macaroni and other rod-shaped dough are divided into rods, which are stored in horizontal position in vertical compartments of several containers. A bucket conveyor supplies equal amounts of rods from the buckets into the upper ends of the compartments. The containers are shiftable on rails by electric motors to place the compartments of all containers successively and selectively under the bucket conveyor. After storage in the container compartments, the lower ends of the compartments are opened for discharge onto a conveyor leading to a packing machine. If the packing machine cannot process the delivered rods, the rods are returned to the bucket conveyor and stored in the container compartments.

3,817,370

MASS-BALANCED VIBRATING CONVEYOR

James P. Cox, Lynden, Wash., assignor to Martin, Robertson & Bain Ltd., Vancouver, British Columbia, Canada

Continuation-in-part of Ser. No. 107,178, Jan. 18, 1971, Pat. No. 3,702,655, which is a continuation-in-part of Ser. No. 14,159, Feb. 25, 1970, abandoned. This application Nov. 31, 1972, Ser. No. 305,972
Int. Cl. B65g 27/00
U.S. Cl. 198—220 CB 14 Claims

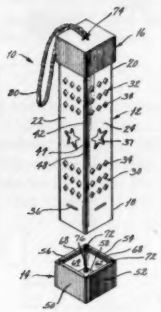


A tray mounted on inclined flexible spring leaves is vibrated by reciprocation opposite to the reciprocation of a balancing mass. The balancing mass can be motor mechanism effecting vibration of the tray through lever means or another tray which is reciprocated oppositely to the first tray.

3,817,371
CONTAINER

Adelaide L. Gatter, House Springs, Mo., assignor to The Pure Co., Inc., St. Louis, Mo.

Filed Jan. 31, 1972, Ser. No. 221,995
Int. Cl. A61l 9/04; B65d 85/70
U.S. Cl. 206—.5 15 Claims



A container having a body member formed as a flat sheet that is folded into a sleeve-like shape and latched together. End cap members are retained at opposite ends of the body member by detent means provided on the end cap and body members. Locating bosses provided in the end cap inhibit deflection of the body member from the end cap member and serve to maintain the detent position of the detent means.

3,817,372
POCKET PILL BOX

Gerald R. Smith, 4560 Lockbourne Rd., Columbus, Ohio 43207

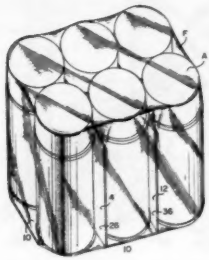
Filed Sept. 9, 1971, Ser. No. 179,132
Int. Cl. B65d 1/24, 43/12, 83/04
U.S. Cl. 206—42 5 Claims

A rectangular receptacle provided with a pair of rows of medication-holding compartments or cavities that are transversely aligned. The bottom ends of the rows of the pair of cavities are joined together in a unitary construction. A sliding cover for the first row of cavities and a sliding cover for the second row of cavities oppositely positioned to that of the first row for maintains the medication in place in the cavities. When either cover is slid to one side or another, the exposed cavity readily dispenses the medication therein. At least one of said cavities in said row being of a different size to hold medication other than that taken in a normal sequence or alternatively to hold medical data in case of emergency.

3,817,373
SHRINK FILM CRADLE

Rolf A. Samsing, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.

Filed June 14, 1972, Ser. No. 262,450
Int. Cl. B65d 75/06
U.S. Cl. 206—432 3 Claims

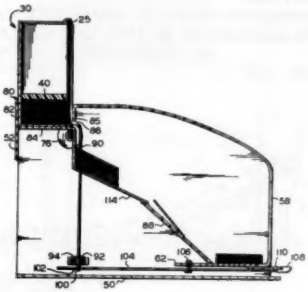


A cradle for supporting a plurality of articles such that the cradle and articles may be enclosed in a shrink film to form a package.

3,817,374
REMINDER SYSTEM AND APPARATUS

Robert J. Hill; Ronald K. Taylor, and Ronald N. Olsen, all of Eugene, Oreg., assignors to Recall Systems, Inc., Eugene, Oreg.

Filed May 4, 1973, Ser. No. 357,463
Int. Cl. B07c 3/02
U.S. Cl. 209—74 R 14 Claims

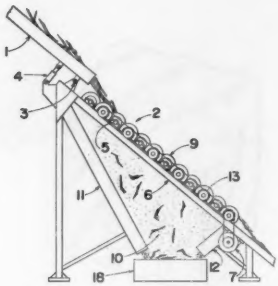


A stack of cards having identifier means at one of a plurality of edge locations are placed into a sorting apparatus adapted serially to feed the cards past a sorting means and separate those cards having their identifier means at a selected location. The balance of the cards are collected in a hopper. The cards can have preprinted messages on them suitable for mailing to a patient or customer. A first embodiment of the sorting apparatus employs a pin for spindling an aperture located on the cards. A second embodiment employs a magnetic head which attracts magnetic material located on the cards.

3,817,375
SEPARATING DEVICE

John W. Herkes, 425 High St., Wailuku, Hawaii 96793

Filed Feb. 28, 1973, Ser. No. 336,425
Int. Cl. B07b *13/04*
U.S. Cl. 209—106 10 Claims

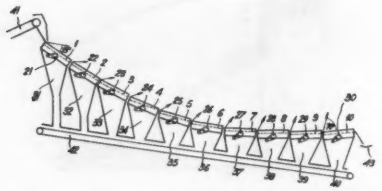


A device for separating loose extraneous materials such as dirt, rocks, sand, soil and leaves from sugar cane stalks is a variable angle deflection chute and a series of pocketed rolls arranged in a slope inclined downwardly and upon which sloping deflection chute, the cane and extraneous materials is dropped to cascade on down the slope over the rolls. The pocketed rolls are power driven in a direction opposed to that of the cascading material. Spaced smooth rings of greater diameter than the pocketed sections and attached to the rolls hold the cane stalks out of contact with the pocketed surface; successful operation of the device requires material flow control for a thin blanket and loosening of dirt, rocks, soil, and leaves in prior steps of the sugar cane cleaning process.

3,817,376
SCREENING PROCESS AND APPARATUS

Eugene Marie Burstlein, 7 rue Basse de la Terrasse, Meudon-Bellevue, France

Continuation of Ser. No. 29,153, April 16, 1970, abandoned. This application Oct. 10, 1972, Ser. No. 299,116
Int. Cl. B07b *1/28*
U.S. Cl. 209—233 4 Claims

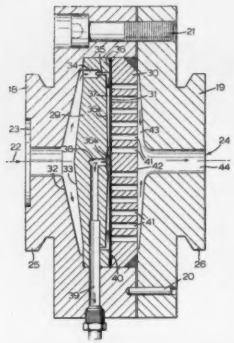


A process for high-efficiency screening on vibrating apparatus of dry or moist granular or powdery substances, wherein the bed depth of the residue on the screening surface increases from a depth at an upstream point to a greater depth at a downstream point, due to the fact that the speed of advance of the residue and the width of the said surface are given values such that the product of the speed of advance and the width, decreases in proportion to the weight loss experienced by the residue between these two points and in inverse proportion to the increase in the bed depth between these same points.

3,817,377
METHOD AND APPARATUS FOR FILTERING FLOWABLE MATERIAL

David C. Piggott, Burlington, Ontario, Canada, assignor to Poly-Converters Limited, Oakville, Ontario, Canada

Continuation-in-part of Ser. No. 55,809, July 17, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 303,750
Int. Cl. B01d *29/38*
U.S. Cl. 210—76 20 Claims

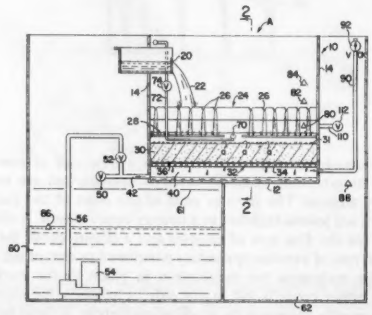


A method and apparatus for separating unwanted particulate material from a flowable material, such as hot thermoplastic polymer, wherein a stream of the flowable material with the particulate material entrained therein is fed to a body containing a filter element so that they pass in operative contact with the filter element with a velocity sufficient to maintain the particulate material entrained in the reduced flow as the filtered material passes from the stream through the filter element. As applied to a continuous polymer extrusion machine the method and apparatus permits continuous operation of the machine with highly contaminated polymer material.

3,817,378
METHOD AND APPARATUS FOR FILTERING SOLIDS FROM A LIQUID EFFLUENT

David S. Ross, Lorain, Ohio, assignor to Hydro-Clear Corporation, Avon Lake, Ohio

Continuation of Ser. No. 155,482, June 22, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,198
Int. Cl. B01d *23/26*
U.S. Cl. 210—80 42 Claims



In a sand filter of the type including a filter tank, a layer of particulate material in the tank and forming a filter element

having an upper surface, an underdrain cavity generally below the filter element, an effluent inlet above the surface, a filtered effluent outlet connected to the underdrain cavity, means for pumping liquid into the underdrain cavity and upwardly through the filter element, control means for energizing the pumping means for a selected duration at controlled backwash times, a backwash outlet in the tank above the upper surface and means for directing fluid through the backwash outlet during each of the backwash times, there is provided a means for forcing fluid upwardly through the filter element and into the tank at times different from the backwash time to increase the total filtering time between necessary backwashing of the filter.

3,817,379

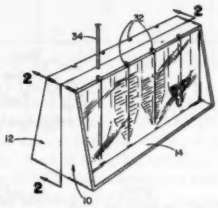
DISPOSABLE LIQUID CONCENTRATING DEVICE

Eliseo M. Zipilivan, Chelmsford; William F. Blatt, Winchester, and Herbert H. Loeffler, Arlington, all of Mass., assignors to Amicon Corporation, Lexington, Mass.

Filed July 10, 1972, Ser. No. 270,011

Int. Cl. B01d *31/00*

U.S. Cl. 210—94 **9 Claims**



A disposable device for concentrating liquid specimens by filtration or ultrafiltration having a chamber with one wall formed of a membrane permeable to the liquid vehicle of the specimen and a layer of solid absorbent material preferably in the form of a coherent sheet of fibrous material resiliently pressed against the membrane outside of the chamber. The front wall of the chamber is preferably rigid and transparent to facilitate determination of specimen size. The lower portion of each membrane wall is preferably blanked off with a sheet of impervious material.

3,817,380

SAFETY OIL STRAINER

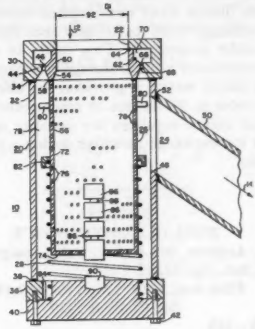
Ralph D. Brown, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1973, Ser. No. 324,053

Int. Cl. B01d *27/10*

U.S. Cl. 210—131 **11 Claims**

A strainer for removing foreign particles carried by a flow of pressurized lubricating fluid in a lubrication system of a large rotating apparatus. The strainer is comprised of a casing and a movable filter element disposed within the casing. The movable filter element is biased by a spring toward a normally sealed relationship between the movable filter element and the casing. The movable filter element is responsive to a pressure change in the influent fluid by moving from the normally closed position to a bypass position when the filter element becomes clogged with foreign particles. As the filter element moves away from the first position, a flange portion of the filter element is exposed to the pressures of the influent field, and assists the movement of the filter element toward the bypass position. A collection magnet is disposed within the movable filter element to collect any ferromagnetic materials carried by the pressurized fluid. The collection magnet cooperates with a second magnet disposed in the casing to assist the movement of the filter element to the bypass position and to secure it there. The magnets also cooperate with the pressure response of the movable filter element to assist the movement of the filter element to the bypass position.



When the movable filter element occupies the bypass position, the lubricating fluid bypasses around the filter element, but continues to supply lubricant to the apparatus.

3,817,381

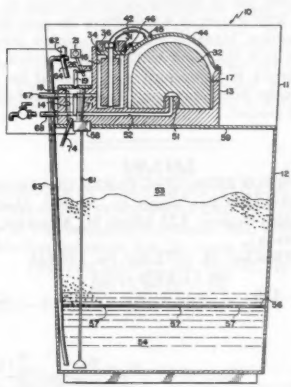
FLUID TREATING APPARATUS AND METHOD

Don E. Heskett, Villa Park, and John Barthello Heskett, Lombard, both of Ill., assignors to Morton-Norwich Products, Inc., Chicago, Ill.

Continuation of Ser. No. 86,043, Nov. 2, 1970, abandoned, which is a division of Ser. No. 581,507, Dec. 23, 1966, Pat. No. 3,538,020, which is a continuation-in-part of Ser. No. 490,802, Sept. 28, 1965, abandoned. This application July 12, 1971, Ser. No. 161,533

Int. Cl. B01d *27/12, 27/02*

U.S. Cl. 210—140 **13 Claims**



A fluid treating apparatus is described which includes a fluid treating cartridge having a body of closely spaced fluid treating aggregate particles bound together by a matrix which consists essentially of a cured resinous polymeric material which aggregate particles have their surface area freely exposed for contacting fluids to be treated therewith and wherein means is provided for passing fluid to be treated through said cartridge during normal service operations and for alternatively supplying a regenerating fluid to said cartridge for regeneration of the treating capacity thereof.

In a preferred embodiment, a water softener is disclosed wherein water to be treated is initially passed through series connected carbon filter and ion exchange resin cartridges, both of which are of the type described and claimed in U.S. Pat. No. 3,538,020. A rotatable valve is provided which in a service mode directs water to be treated through the carbon and ion exchange resin cartridges and then to a water discharge outlet connection. This valve, in a regeneration mode, communicates a brine storage compartment with the cartridge. Control means is provided for alternatively positioning the valve in the service or regeneration modes and a brine control means regulates the quantity of brine passed through the ion exchange cartridge during a given regeneration operation.

3,817,382

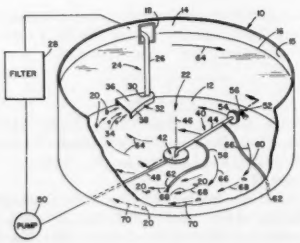
POOL CLEANING DEVICE

Howard M. Arneson, San Rafael, Calif., assignor to Arneson Products, Inc., San Rafael, Calif.

Filed Aug. 5, 1971, Ser. No. 169,198

Int. Cl. E04h *3/20*

U.S. Cl. 210—169 **3 Claims**



A pool cleaning device for pools having flat, horizontal floors and upright sidewalls. One or more nozzles are continuously moved in a given direction over the pool floor and discharge water jets to thereby circulate debris on the pool floor and at least a layer of water above the pool floor in an opposite direction. Means is provided to gather debris circulating on the pool floor and withdraw such debris from the pool. The device is particularly well adapted for use with generally circular pools commonly known as vinyl liner pools placed above ground.

3,817,383

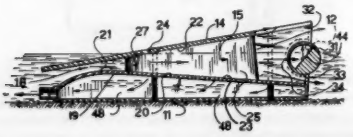
APPARATUS FOR REMOVING PARTICULATE MATTER

Bernard Michel, 739 Des Vignes St., St. Foy, Quebec, and Arthur Allison Delaney, 625 Milton St., Montreal, Quebec, both of Canada

Filed July 26, 1972, Ser. No. 275,145

Int. Cl. E02b *15/02*

U.S. Cl. 210—170 **12 Claims**



A device for removal of particulate and other solid matter or suspended material from a moving stream of water and which provides for the separation and diverting of a relatively uncontaminated strata from the stream of water. The device is either partially or totally submergible in water and has a passageway which initially narrows in at least one region in the direction of movement of the water and widens in a plane perpendicular thereto in a subsequent region in the direction of movement of the water. The shape of the passageway generates a stream velocity which permits formation of an upper strata carrying flotatable particulate material, and a lower strata which contains and carries other settlable particulate matter and an intermediate strata which is relatively uncontaminated with these particulate matters. A splitter which projects into the stream separates the upper and lower strata permitting discharge thereof and diversion of the center or intermediate strata to a site of utilization.

3,817,384

PALM OIL RECIRCULATING SYSTEM FOR COLD-STRIP MILL

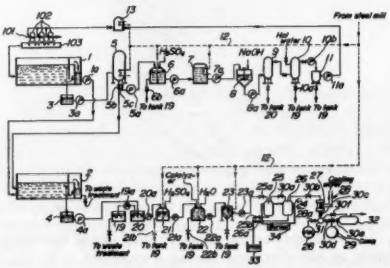
Takayoshi Tanaka, Narashino, and Mitsukane Nonoyama, Chiba, both of Japan, assignors to Kawasaki Steel Corporation, Kobe City, Japan

Filed Apr. 23, 1973, Ser. No. 353,560

Claims priority, application Japan, Apr. 26, 1972, 47-41905

Int. Cl. B01d *35/18*

U.S. Cl. 210—177 **7 Claims**



A system of recirculating lubricant palm oil in a cold-strip mill, including an iron remover for separating iron from used palm oil by using sulfuric acid and steam available in the mill, which steam provides heat and agitation for separating the iron as iron sulfates. The system also removes fatty acids in the used plam oil by saponifying them, so as to recirculate iron-free and fatty-acid-free palm oil to the cold-strip-mill.

3,817,385

METHOD AND A DEVICE FOR COLLECTING SUBSTANCES FLOATING IN A LIQUID SURFACE

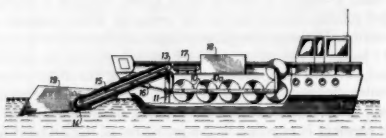
Hans Leopold Bergman, Vallatorg 81, Stockholm, Sweden

Filed Apr. 1, 1971, Ser. No. 130,300

Claims priority, application Sweden, Apr. 13, 1970, 4994/70

Int. Cl. E02b *15/04*

U.S. Cl. 210—242 **5 Claims**



A method and an apparatus for collecting substances floating in a liquid surface, especially oil and other sticky liquids in a water surface, using an endless, rotating conveyor band, one end of which being immersed in the liquid, and a collecting band, which is running from a supply down into the liquid and,

resting on the conveyor band, up from the liquid, carrying with it substances floating in the liquid surface to a collecting device, receiving the collecting band and the substances transported on said band. Thus, substances in the liquid surface are lifted up from underneath and removed out of the liquid by the collecting band.

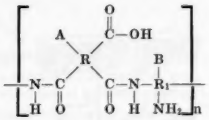
3,817,386

REVERSE OSMOSIS MEMBRANES FROM PYRRONE POLYMER PRECURSORS

Lawrence W. Frost, Murrysville, and Pang-Kai Lee, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1972, Ser. No. 249,999
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **6 Claims**

A permselective polymeric membrane for use in a reverse osmosis system is prepared from nitrogen linked organic polymers, having pendant carboxyl and amino groups, of the formula:



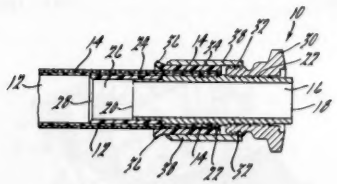
where A is a —H or $—CO_2H$ radical; B is a —H or $—NH_2$ radical; R and R_1 are tetravalent organic radicals in which the carboxyl or amino radical is alpha, ortho, or peri to one of the amide linkages; A or B is alpha, ortho, or peri to the other amide linkage; R contains at least two carbon atoms and R_1 contains at least four carbon atoms.

3,817,387

REVERSE OSMOSIS MEMBRANE END FITTING

Wilfred H. Bachle, Long Beach; John L. Richardson, and Gilbert Segovia, both of Santa Ana, all of Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed July 30, 1973, Ser. No. 383,976
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **6 Claims**



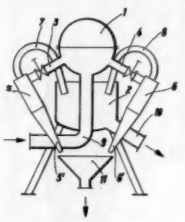
An end fitting for a delicate reverse osmosis membrane of tubular configuration is disclosed. The end fitting provides a transitional internal support for the membrane in the area of the fitting. Specifically, the end fitting provides a graduated internal support for the membrane as the membrane approaches the fitting to a point at which the membrane overlies a member which provides substantial internal support therefor. In the fitting there is not an abrupt change in support for the membrane from an area of no support to an area of total support over the internal member. By eliminating such a sharp change in support for the membrane, chances for rupture of the membrane in the area of the end fitting are greatly reduced when the membrane is subjected to a small, negative internal pressure.

3,817,388

HYDROCYCLONE ARRANGEMENT

Helmut Franz Trawinski, Hirschau, Upper Palatinate, Germany, assignor to Firma Amberger Kaolinwerke GmbH, Hirschau, Upper Palatinate, Germany

Filed July 24, 1972, Ser. No. 274,347
Claims priority, application Germany, July 24, 1971, 2137137
Int. Cl. B01d *21/26*
U.S. Cl. 210—322 **12 Claims**



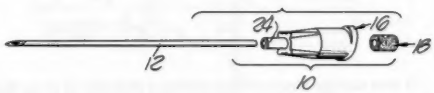
In a hydrocyclone arrangement at least two hydrocyclones are spaced laterally apart with a filling chamber, an overflow chamber and an underflow chamber arranged centrically of the hydrocyclones. The filling chamber is aligned above the overflow chamber and the underflow chamber is aligned below the overflow chamber. The hydrocyclones are disposed obliquely of the vertical so that the underflow from each is directed into the underflow chamber. The filling chamber has a spherical configuration and a separate connection extends radially outwardly from the filling chamber to each of the hydrocyclones. A supply connection extends vertically upwardly into the filling chamber passing vertically through the overflow chamber and then extending horizontally outwardly or continuing to proceed vertically through the underflow chamber. Replaceable wear protection parts are positioned in the filling chamber and the filling chamber is constructed so that it can be opened for access to the wear protection parts. Further, the wear protection parts can be arranged to form enclosed wear indication spaces within the filling chamber connected through a tubular member with the outside atmosphere. Each of the filling chamber, overflow chamber and underflow chamber can be divided in two by vertical partitions for forming independent functional groups of the separate chambers each associated with a different hydrocyclone.

3,817,389

FILTER DEVICE IN TUBULAR FITTING FOR MEDICAL INJECTION EQUIPMENT AND THE LIKE

Theodore E. Weichselbaum, Normandy, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Jan. 15, 1973, Ser. No. 323,726
Int. Cl. B01d *35/00*
U.S. Cl. 210—448 **7 Claims**



A cylindrical, cup-shaped, porous, sintered powdered metal filter is sealed in a tubular thermoplastic fitting (e.g., the needle-retaining hub of a hypodermic needle or an adaptor or a connector in the line of an intravenous infusion set) by force-fitting the open end of the filter within an annular bead on the interior wall of the tubular fitting and induction heating the filter so that the thermoplastic bead will flow into the pores of

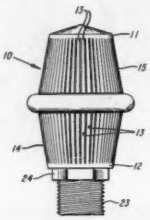
the filter to form a continuous ring seal between the filter and the interior wall of the fitting.

3,817,390

NON-METALLIC, ONE-PIECE FILTER STRAINER HEAD

Adam B. Maruniak, 123 W. Franklin St., Otsego, Mich. 49078, and Zigfrids Jirgens, Sr., 8388 W. D Ave., Kalamazoo, Mich. 49009

Filed Aug. 18, 1972, Ser. No. 281,823
Int. Cl. B01d *27/00*
U.S. Cl. 210—460 **4 Claims**



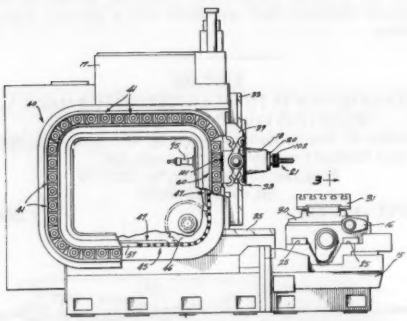
A filter strainer head comprises a pair of opposed hollow half-shells made of a moldable plastic resin and provided with outwardly extending peripheral flange on each half-shell. The flanges are in an abutting relationship relative to one another and a peripheral bead of a moldable plastic resin is integrally fused to both of the abutting flanges. At least one of the half-shells is provided with a plurality of filtering openings, and one of the half-shells is provided with a fluid outlet opening.

3,817,391

TOOL STORAGE MAGAZINE

Earl R. Lohneis, and Frank Zankl, both of Milwaukee, Wis., assignors to Kearney & Frecker Corporation, West Allis, Wis.

Filed May 22, 1972, Ser. No. 255,409
Int. Cl. A47f *3/08, 7/00*
U.S. Cl. 211—1.5 **14 Claims**



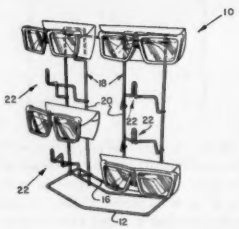
A tool storage magazine for storing a plurality of tools that are adapted to be used in the work station of a machine tool. The magazine includes a chain driven in an established path of travel by a suitable source of power. A plurality of cartridges are coupled to the chain for movement with it in the same path of travel. Each of the cartridges is provided with a suitable opening forming a socket for receiving the shank of a tool so that each of the cartridges in the magazine may carry a tool. A tool change station is provided in the magazine wherein the cartridges may be removed as well as returned to the magazine for storage. The cartridges are coupled to the chain in such a manner that they may be uncoupled by simply moving the cartridge away from the chain at the tool change station. Moreover, the spacing of the cartridges along the chain can be varied to accommodate different size tools to be stored. For example, if certain types of tools require more room on each side because of their configuration, the cartridges may be spaced along the chain accordingly, in the most efficient manner, to conserve the capacity of the magazine to carry tools.

3,817,392

SUNGLASS AND SUNGLASS CASE DISPLAY STAND

Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.

Filed Nov. 9, 1972, Ser. No. 306,222
Int. Cl. A47f *7/00*
U.S. Cl. 211—13 **2 Claims**



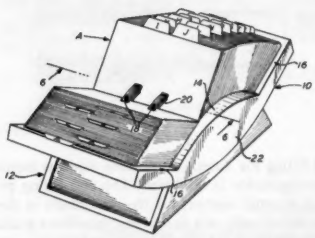
A display stand for sunglasses and the cases therefor wherein the cases are supported directly behind and serve to maintain the position of the sunglasses on the display stand.

3,817,393

CARD HOLDING DEVICE

Hildaur L. Neilsen, Metuchen, N.J., assignor to Zephyr American Corporation, Long Island City, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,339
Int. Cl. A47b *63/06*
U.S. Cl. 211—50 **9 Claims**



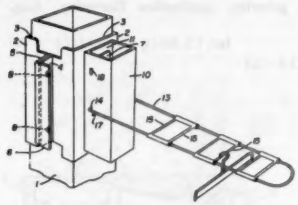
A card holding device has arcuate slide means enabling an open card holding body element to slide back and forth arcuately on a base element to facilitate reference to the cards. The slide means comprise intimately opposed, cylindrical, upwardly arcing, slideably coacting surfaces of substantial length and of relatively large radii, enabling the body element both to tilt and to be bodily displaced forwardly and rearwardly.

3,817,394

ARTICLE SUPPORTING DEVICE

Tomihei Saiki, No. 116, 3-chome, Yagumo-naka-machi, Moriguchi-shi, Osaka, Japan

Filed Sept. 12, 1972, Ser. No. 288,358
Claims priority, application Japan, Oct. 14, 1972, 47-94909; Sept. 23, 1971, 46-87134; Oct. 15, 1971, 46-95595
Int. Cl. A47f 5/08, 5/12
U.S. Cl. 211—110 4 Claims



An article supporting device useable for a coatrack or the like comprising a square pillar standing on a base plate, a pair of identically shaped metal members to be fixed to the square pillar in a symmetrical manner extending in either of four directions of the square pillar at a desired height, each of the metal members having a portion engaging with the pillar, flange-like bent portions at both sides of the engaging portion, and a protecting bent portion adjacent to one of the flange-like bent portions, and said portion engaging with the pillar having outward projections, at least one fixing member having holes to be engaged with the outward projections so that the fixing member is fixed to the outer surface of the engaging portion of the metal member, and a supporting member hinged to the fixing member so that the supporting member can be sustained to a horizontally extending position or to a vertically set back position.

3,817,395

PACKAGE DISPLAY RACK

Romie L. LeFever, Irving, Tex., assignor to Self Serv Fixture Co., Inc., Dallas, Tex.

Filed Sept. 15, 1972, Ser. No. 289,307
Int. Cl. A47f 5/12
U.S. Cl. 211—170 4 Claims

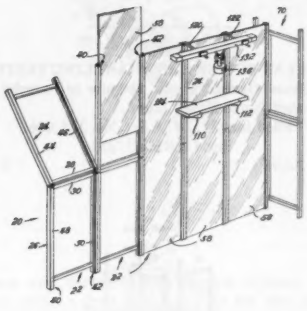
Disclosed is a display rack for holding and displaying packaged items such as shirts, sweaters, etc. The rack includes a frame for holding the packaged items pivotally mounted on a support structure. The frame may be pivoted on the support structure from a rest position to a pivot position thereby presenting the packages for easy removal from the frame. A hook element is attached to the frame so that when the frame is pivoted toward the pivot position, the hook element engages a bar mounted on the support structure to prevent the frame from pivoting beyond the pivot position.

3,817,396

PORTABLE DISPLAY APPARATUS

David E. Markson, Chicago, Ill., assignor to Package Exhibit Programs, Inc., Lincolnwood, Ill.

Filed June 9, 1972, Ser. No. 261,520
Int. Cl. A47f 5/10
U.S. Cl. 211—178 R 5 Claims



A portable display apparatus which is designed to be easy to assemble and disassemble and to have a light weight construction comprises a plurality of display units joined together in a side-by-side relation. Each of the display units is identical in construction comprising a pair of skeletal frames made of metal tubing and hinged together along one common side so that one of the frames can be swung above the other. Each of these skeletal frames includes a pair of inwardly facing track means provided on the opposite upstanding sides in order to slidably mount a pair of light weight insert panels. When the display units are bolted together they provide a unitary display structure and include means for mounting shelves, lighting fixtures, and the like. A support unit is fastened to each end of the unitary display structure to hold it up in an upstanding position.

3,817,397

TELESCOPIC MASTS OR TOWERS

Donald Edward Wellman, Komoka, Ontario, Canada, assignor to General Crane Industries Limited, London, England

Filed Nov. 2, 1972, Ser. No. 303,041
Claims priority, application Great Britain, Nov. 4, 1971, 51288/71; Mar. 16, 1972, 12480/72
Int. Cl. B66c 23/06
U.S. Cl. 212—57 27 Claims

A telescopic mast or tower, particularly the tower of a mobile tower crane, in which the sections are telescopically ex-

tendible by a hydraulic cylinder and have wedging means on adjacent sections which come into engagement when the adjacent tower sections are fully extended relative to each other. The wedging means both limit extension of the tower sections and hold these rigidly together when extended. The hydraulic cylinder is constantly maintained under pressure while the crane is operating to maintain the pressure between the wedges and to reduce or eliminate compressive stress in the tower.

3,817,398

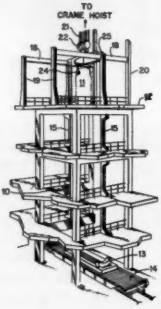
NUCLEAR POWER CASK HANDLING SYSTEM

Cecil Roy Jones, Orange, Conn., assignor to Transfer Systems Incorporated, North Haven, Conn.

Filed Jan. 22, 1973, Ser. No. 325,646

Int. Cl. B66c *21/00*

U.S. Cl. 212—98 **12 Claims**



A cask-handling system for a nuclear power station is described. The cask is employed to carry nuclear fuel elements to and from a storage depot within the station via a hatch in the station. The cask is lifted through the hatch by means of an overhead crane. The invention provides an independent second load path for the cask during its transit through the hatch. The second load path is provided by a strongback coupled to the crane and to the cask and adapted to be selectively coupled and uncoupled to a vertical support structure in the hatch.

3,817,399

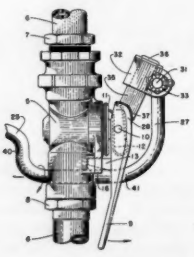
DUAL OPERATED ANGLE COCKS

Henry R. Billeter, Deerfield, Ill., assignor to Sloan Valve Company, Franklin Pk., Ill.

Filed Feb. 15, 1973, Ser. No. 332,904

Int. Cl. B61g *3/08, 5/08*

U.S. Cl. 213—1 R **7 Claims**



An angle cock has its operating handle operable from either side of a railway car. A rod attached to the angle cock handle extends below the angle cock and the car coupler to the other side of the car so that the brakeman can operate the angle cock from either side of the car.

3,817,400

SPRING ELEMENT FOR AUTOMATIC CENTER HEAD COUPLERS OF RAILROAD VEHICLES

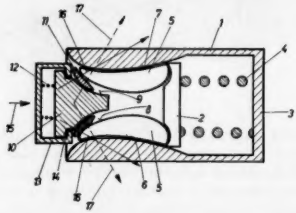
Axel Schelle, Rottach-Scherfen, Germany, assignor to Knorr-Bremse KG, Berlin and Munich, Germany

Filed Aug. 22, 1972, Ser. No. 282,669

Claims priority, application Germany, Aug. 31, 1971, 2143563

Int. Cl. B61g *9/18, 11/14*

U.S. Cl. 213—24 **6 Claims**



A spring element has a thrust member which is insertable axially into a sleeve against spring and friction forces and is coupled by force transmitting wedge means to a friction element. The friction element has a pressure surface which moves along a correspondingly shaped friction surface on the inner face of the sleeve. The pressure surface and the sleeve friction surface extend in the direction of insertion of the thrust member and the sleeve friction surface has a convex curvature. Insertion of the thrust member will cause the friction element to move over the sleeve friction surface to generate friction forces acting against the thrust member.

3,817,401

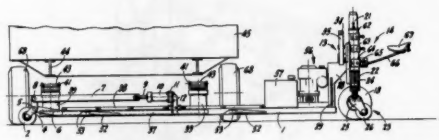
SELF-PROPELLED DUAL-JACK HOIST

Clifford E. Becker, 817 Camellia Dr., Paradise, Calif. 95969

Filed Aug. 7, 1972, Ser. No. 278,580

Int. Cl. B25j *3/00*

U.S. Cl. 214—1 D **10 Claims**



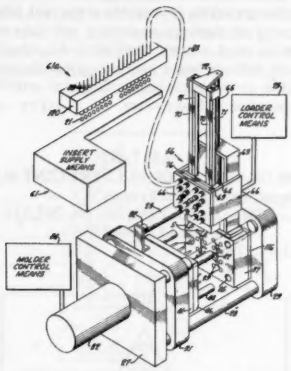
A self-propelled, steerable hoist in the nature of a low-bed vehicle especially designed, but not limited, for use to lift—from beneath and at selected points—a mobile home during the course of placement of said mobile home on blocks at a semi-permanent location. The hoist includes a low-level but normally aboveground, elongated bed-frame adapted to be run under the mobile home and then lowered into engagement with the ground for use of the hoist, and a plurality of hydraulic jacks on the bed-frame of the mobile home to lift the latter for the purpose described. The jacks are mounted on a powered reversible slide carried by the bed-frame so that the mobile home, as lifted by the jacks, is then positionally adjustable by the slide in the direction of movement thereof.

3,817,402

MOLDING ARTICLES CONTAINING INSERTS

Roger D. Van de Walker, and Blair E. Howe, both of Costa Mesa, Calif., assignors to California Injection Molding Co., Inc., Costa Mesa, Calif.

Division of Ser. No. 79,191, Oct. 8, 1970, Pat. No. 3,719,396.
This application Nov. 24, 1972, Ser. No. 309,451
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BT **2 Claims**



A method and apparatus for mass-manufacturing elongated hollow plastic objects, such as covers for electronic thermometer probes, and ball point pens, having inserts at the ends thereof. The inserts are automatically loaded, by vibrating the same into pockets and then lifting them out of the pockets into suction tubes which pass through a horizontal transfer plate into nests in a vertical transfer plate. Vacuum is employed to maintain the inserts in the nests during movement of the vertical transfer plate to positions adjacent the distal ends of hollow core pins through which air is sucked. The vacuum in the vertical transfer plate is then converted to pressure to cause the inserts to fly across the air gaps to the core pin ends, following which the inserts are maintained on such ends by suction. The mold is then closed to cause the inserts to engage spring-biased plungers, following which the plastic is injected.

3,817,403

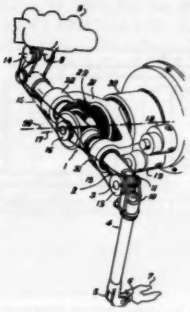
REMOTE MANIPULATOR

Charles Glachet, Vendome; Jean-Pierre Guilbaud, Jouars Pontchartrain, and Jean Vertut, Issy-les-Moulineaux, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 25, 1973, Ser. No. 354,380
Claims priority, application France, May 10, 1972, 72.16860
Int. Cl. B25j *3/00*
U.S. Cl. 214—1 CM **4 Claims**

The remote manipulator of the master-slave type comprises an arm pivoted about a shoulder axis, a fore-arm pivotally mounted on an elbow pin having an axis which is parallel to the shoulder axis and a tong unit pivotally mounted on a wrist pin provided at that end of the fore-arm which is remote from the elbow pin.

In order to carry out the movement of the arm about the shoulder axis, the movement of rotation of the arm about its own axis and the movement of the fore-arm about the elbow-pin axis, two motors are mounted as a differential drive system so as to ensure that the sum of their actions initiates one of the



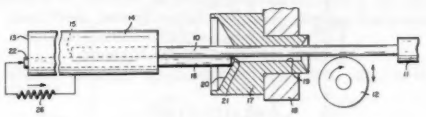
movements and the difference thereof initiates a second movement whilst a third motor initiates the third movement independently of the two other motors.

3,817,404

BAR REPLENISHING SYSTEM

Paul T. Heanue, Fayetteville, N.Y., assignor to Lipe Rollway Corporation, Syracuse, N.Y.

Filed Oct. 13, 1972, Ser. No. 297,443
Int. Cl. B65h *5/00*
U.S. Cl. 214—1.5 **7 Claims**



The invention feeds replenishment bars into the stock tube of a screw machine to follow a preceding bar into a bar feeder mechanism. It includes resilient means for engaging the trailing end of the replenishing bar and urging it into the rear end of the stock tube; also, a bushing just ahead of the bar feeder has a through opening sized to admit only one of the bars to the feeder, and the bar entry end of the bushing has a concave surface funnelling down to the through opening to hold the replenishing bar until the trailing end of the preceding bar passes into the through opening.

3,817,405

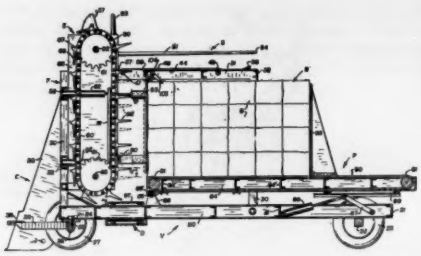
BALE HANDLING APPARATUS

Allan B. Neely, Jr., 12991 Nevada, Aurora, Colo. 80010

Filed Feb. 26, 1973, Ser. No. 335,547
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **11 Claims**

The invention concerns an apparatus at one end of a vehicle for loading and unloading hay bales onto and from the vehicle. The vehicle carries a horizontally disposed bale stack having bales arranged in vertical tiers which shift along the deck of the vehicle as bales are moved into and out of the loading and unloading apparatus. For building up the stack, the apparatus will pick up bales, convey the same to a table above the stack where the bales are arranged as layers of a tier, and the apparatus will then lower the tier into position at deck level and

shift the tier onto the deck as part of the stack. When the stack is completed, the vehicle is moved to an unloading station. To unload the bales in the stack, a reverse operation is effected. A



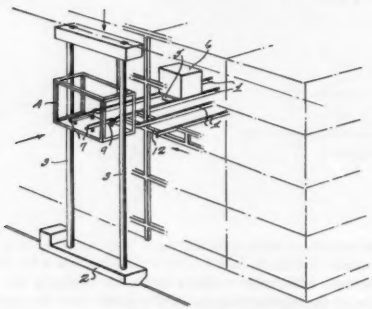
tier is shifted into the loading and unloading apparatus and it is then dropped, layer by layer, onto a conveyor below the stack level for discharge of one bale at a time from the stack.

3,817,406

AUTOMATIC STORAGE SYSTEM WITH STACKER CRANES AND LOAD HANDLING DOLLIES

Yuji Sawada; Katsumi Takemoto; Yasuro Maruoka, and Masayuki Kuroiwa, all of Tokyo, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1973, Ser. No. 342,215
Claims priority, application Japan, Jan. 19, 1973, 48-7875
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 C 5 Claims



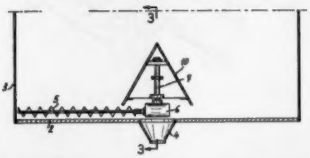
In an automatic storage system of the type comprising article receiving dollies and article delivery dollies, a number of racks arranged horizontally in a plurality of rows and vertically in a plurality of stages and each serving simultaneously as dolly running rails, article loading stacker cranes and article unloading stacker cranes respectively movable along the article receiving and delivery ends of said racks and each being provided therein with a vertically movable carriage, article receiving home positions and article delivery home positions respectively provided on the article receiving and delivery sides of the racks, control means provided on the article receiving side of the racks for controlling the article storing operation such that the transfer of an article from each article receiving home position to the article receiving end of a selected rack is effected by one of said article loading stacker cranes and the transportation of the article from said receiving end to an inner position of the rack is effected by one of said article receiving dollies, and control means provided on the article delivery side of the racks for controlling the article delivery operation such that the transportation of an article from the stored position to the article delivery end of the associated rack is effected by one of said article delivery dollies and the transfer of the article from said delivery end to one of the article delivery home positions is effected by one of said article unloading stacker cranes; each of said carriages is provided with a pair of dolly running rails which, when the associated stacker crane is positioned in front of a selected rack, will be aligned with the opposite end of said rack in contact therewith to provide for movement of the dolly from the rack onto the carriage or vice versa and each of said control means is so operative that the dolly transferred onto the stacker crane upon unloading the article therefrom is returned to the rack to or from which the article has been carried in or carried out when the other dolly is available at the rack where the next article storing or delivery operation will take place, or is retained in the stacker crane to be carried to one of the article receiving or delivery home positions when the other dolly is not available at the rack where the next article storing or delivery operation will take place.

3,817,407

SILO FOR GRANULAR OR PULVERULENT MATERIALS

Paul Cantenot, Parcey Jura, France

Filed Oct. 13, 1972, Ser. No. 297,337
Int. Cl. B65g *65/46*
U.S. Cl. 214—17 DA 3 Claims



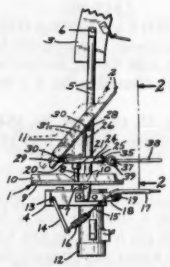
This silo having a circular cross-section and a vertical axis comprises near its bottom a diametral beam of inverted V configuration for sheltering the mechanism within the silo driving the discharge member against the action of the stored material. This mechanism may be disposed above or beneath the floor and the beam is so dimensioned and positioned that the natural angle of repose of the stored material cannot impinge directly, by gravity, upon the mechanism.

3,817,408

SILAGE DISTRIBUTION APPARATUS

Newell B. Hanson, Lake Lillian, Minn., assignor to Hanson Silo Company, Lake Lillian, Minn.

Filed Dec. 15, 1972, Ser. No. 315,528
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CB 5 Claims



A frame attached to the discharge end of a silo loading chute and depending therefrom, the frame supporting a normally generally horizontal rotary silage distributor plate un-

derlying the discharge end of the chute, and an angularly positioned deflector plate between the distributor plate and the discharge end of the chute. The deflector plate is positioned so that silage falling from the discharge chute is caused to travel downwardly and radially outwardly with respect to the distributor plate. The deflector plate is adjustably movable in directions to shift the path of silage flowing from the deflector plate radially inwardly or outwardly with respect to the distributor plate.

3,817,409

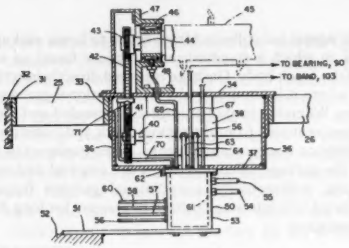
SILO UNLOADER AND APPARATUS THEREFOR

Richard L. Weaver, Rt. 1, Myerstown, Pa. 17067

Continuation-in-part of Ser. No. 218,736, Jan. 18, 1972. This application Aug. 24, 1972, Ser. No. 283,384

Int. Cl. B65g *65/46*

U.S. Cl. 214—17 DA **6 Claims**



A silo unloader is provided, of the bottom unloader type, wherein an auger type conveyor is utilized for cutting silage and delivering it generally radially inwardly, with one or more auxiliary augers being provided. Te auger is supported at its radial outermost end and is intermittently driven in a sweeping motion. Particularly novel driving apparatus is provided, for causing such a sweeping motion of the auger, as well as systems for lubricating various components of the apparatus.

3,817,410

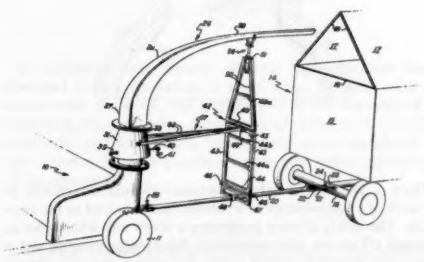
FIELD CUTTER SPOUT STABILIZER

Melvin D. Braun; Gerald L. Braun, and John F. Braun, all of Miltonvale, Kans. 67466

Filed Apr. 17, 1973, Ser. No. 351,998

Int. Cl. B65g *67/24*

U.S. Cl. 214—42 A **12 Claims**



A field cutter spout stabilizer and means for supporting the spout is disclosed whereby the discharge end of the spout is capable of horizontal and vertical movement to accommodate for turning and/or up and down movement of the cutter, as the cutter is drawn through a field, so that the spout will be properly positioned at all times with respect to an opening in a trailing wagon for delivery of material through the opening.

3,817,411

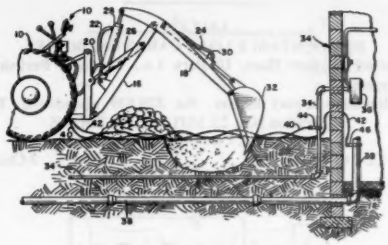
UNDERGROUND PIPE WARNING AND IDENTIFICATION APPARATUS

James R. Brown, 875 Rickey Rd., Zanesville, Ohio 43701

Filed Oct. 18, 1972, Ser. No. 298,583

Int. Cl. E02f *9/24, 9/26, 3/32*

U.S. Cl. 214—138 R **6 Claims**



Apparatus for use in conjunction with excavating machinery includes a warning and identification circuit for locating underground pipes and having a first indicator signalling the in-use status of the circuit, a warning lamp and a warning horn selectively actuated in response to the physical contacting of the tool portion of the excavating machine with an underground pipe, a selector switch operable to classify the type of pipe which has been contacted, and a disabling circuit for automatically interrupting operation of the excavating machine upon contact with the pipe.

3,817,412

METHOD OF CONNECTING UNDERWATER INSTALLATIONS

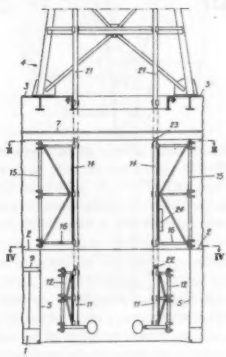
Bernard M. Mercier, St. Maur, and Francisco De A. M. Serrano, Paris, both of France, assignors to Subsea Equipment Associates Limited (SEAL)

Filed Oct. 20, 1972, Ser. No. 299,551

Claims priority, application France, Oct. 21, 1971, 71.37808

Int. Cl. E21b *3/00*

U.S. Cl. 214—152 **3 Claims**



A ship is provided with a through-hull well extending from the upper deck 3 through the main deck 2 to the ship's bottom. A derrick 4 is positioned on the upper deck above the well. To assemble a multi-unit load for lowering to the sea bottom, a sliding platform 10 at the main deck level is moved over the well opening. A sliding crane just below the upper deck then transports a first load unit from a storage area adjacent

the well to the platform. The crane is then withdrawn, the load unit is restrained against lateral movement in vertical guides, and is raised up into the derrick. Additional load units are delivered in this manner to the platform and coupled to the unit(s) above it to produce the final load. The platform is then slid back from the well opening and the load is lowered by the derrick to the sea bottom.

3,817,413

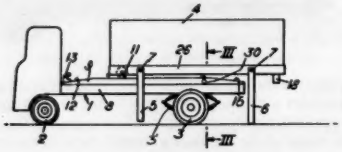
DEMOUNTABLE LOAD CARRYING BODIES

Rowland Herbert Ham, 10 Park Ln., Twyford, Berkshire, England

Continuation-in-part of Ser. No. 875,839 abandoned. This application Nov. 23, 1971, Ser. No. 201,365

Int. Cl. B60p *1/64*

U.S. Cl. 214—515 **3 Claims**



An attachment for a load carrying vehicle, or a load carrying vehicle incorporating the attachment, comprising longitudinal rails mountable one on each of two spaced longitudinal vehicle chassis members, and jacks to lift the rear portion of the rails off the chassis members, the jacks being fast with a fixed part of the chassis and operable to lift the rear of the rails off the chassis members when the vehicle has moved under the load supported on legs.

3,817,414

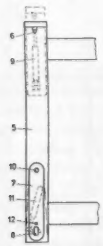
LATERAL CONTAINER GRABBER HAVING CARRYING PINS AT THE LOWER CORNERS OF THE CONTAINER

Lahja Arvid Peltonen, Tampere, Finland, assignor to Valmet Oy, Helsinki, Finland

Filed May 24, 1972, Ser. No. 256,591

Int. Cl. B66f *9/18*

U.S. Cl. 214—621 **3 Claims**



A lateral container grabber is carried by a lifting carriage of a carrier and is adapted to engage a container having apertures at its corners. The grabber has upper guiding pins and lower supporting pins. The guiding pins engage upper corner pieces of the container. Each of the supporting pins is connected with a swingable lever and has a tapering end to facilitate its entry into an aperture of the container. The supporting pins are also connected with locking cylinders.

3,817,415

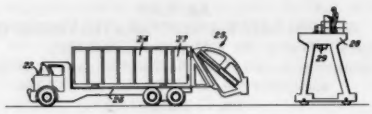
CONTAINERIZED SYSTEM FOR WASTE DISPOSAL

Arthur L. Lewis, Brooklyn, N.Y., assignor to John J. McMullen Associates, Inc., New York, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,813

Int. Cl. B65f *3/02*

U.S. Cl. 214—83.3 **1 Claim**



Solid wastes are collected from house to house pickups with a truck in which a standardized container forms an integral part of the truck body. Garbage is placed directly into the container where it is compacted by a conventional garbage truck injector. When the container is filled, it is sealed and the entire container removed from the pickup truck and transferred to a long distance transportation means. After transport to remote areas, the garbage-filled containers are emptied and returned for reuse. Alternatively, conventional garbage trucks may eject their loads into standardized containers for long distance transportation.

3,817,416

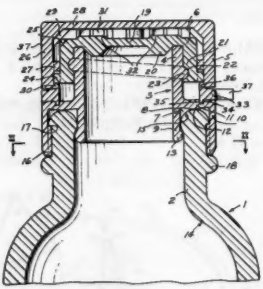
SAFETY CLOSURE CAP FOR CONTAINERS

Allan Costa, 682 Udall St., West Islip, Long Island, N.Y. 11795

Filed Aug. 2, 1972, Ser. No. 277,397

Int. Cl. A61j *1/00*; **B65d** *55/02*

U.S. Cl. 215—9 **21 Claims**



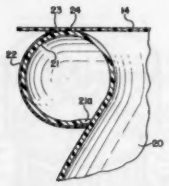
There is disclosed a safety container closure attachable to the neck of a container or to a tubular base secured to the container. The safety closure comprises a screw cap which can be screwed off or on and constitutes the closure proper and a cover cap rotatably fitted upon the screw cap completely overlying the screw cap to prevent direct access to the same. The cover cap is normally biased into a position spaced apart from the screw cap so that rotation of the cover cap has no effect on the screw cap but can be axially depressed into a position in which it is coupled to the screw cap. With the cover cap in this coupling position, rotation of the cover cap causes rotation of the screw cap also thereby permitting opening or closing of the container.

3,817,417

SANITARY CONTAINER AND LID CONSTRUCTION

Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 56,560, July 20, 1970, abandoned. This application Aug. 26, 1971, Ser. No. 175,260
Int. Cl. B65d *51/08*
U.S. Cl. 215—37 R 2 Claims



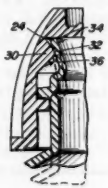
A sanitary container and lid construction with the open end of the container presenting a peripheral drinking or pouring lip and initially covered by a coating layer or film to which the container lid or film is suitably attached. It is alternatively contemplated that the lid may be attached both to the rim or lip and the coating. The coating and lid preserves the initial sanitary condition of the lip and the interior of the container, and the coating and lid are of such that the coating and lid will be peeled away from the lip with a reverse drawing of one edge of the lid across the top of the container to expose the contents of the container and to leave a sanitary lip for drinking or pouring purpose.

3,817,418

THREADED CONTAINER SEAL

Donald Mastrovito, Shrewsbury, Mass., assignor to Family Products, Inc., Cambridge, Mass.

Filed Sept. 20, 1972, Ser. No. 290,746
Int. Cl. B65d *41/04*
U.S. Cl. 215—40 6 Claims



A container and closure wherein the container has a threaded neck terminating at a top edge. The threaded cap screws onto the neck, and engagement of the top edge of the neck with the cap causes the upper end of the neck to expand outwardly and form a seal between the outer surface of the upper end and a sealing surface on the cap, below the top edge of the container.

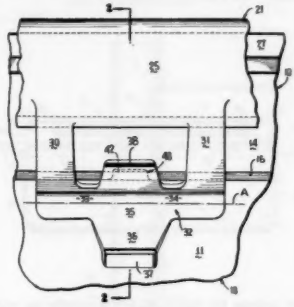
3,817,419

LATCH TO SECURE A CLOSURE ON A CONTAINER

Jens L. Moller, Darien, and Herbert S. Ruekberg, Highland Park, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,216
Int. Cl. B65d *43/10*, *45/18*
U.S. Cl. 220—59 5 Claims

This disclosure is directed to a latch mechanism carried by a peripheral skirt of a container closure, the latch mechanism including a pair of spaced supporting straps of flexible material joined together by a bridging member, a latching hook disposed between the supporting straps and being carried by the bridging member, and the latching hook having a latching nose projecting toward the peripheral skirt whereby in the latched condition of the latch mechanism the latching nose is adapted for latching engagement against a container latching



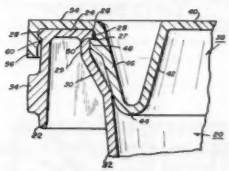
surface and is held thereat by the flexible nature of the and/or straps ad/or a resilient gasket (compressed). Preferably the latch mechanism also includes an upright projection carried by the bridging member outboard of the latching nose and between the supportng straps against which pressure is applied to pivot the latching hook through the bridging member incident to latching and unlatching operations.

3,817,420

PLASTIC CONTAINER WITH PLUG-TYPE PLASTIC COVER

Raymond A. Heisler, 657 Dakota Trl., Franklin Lakes Township, N.J. 07417

Filed July 26, 1972, Ser. No. 275,443
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R 12 Claims



This invention pertains to plastic pails closed by plug-type plastic covers such as that shown in my U.S. Pat. application Ser. No. 122,303 filed Mar. 9, 1971. The pail and cover disclosed in the present application provide four modifications in which the tension developed in the annular top ring portion of the attached cover is used to retain mating inner and outer tongue and groove portions in a tightly sealed condition. In one embodiment the cover is molded so that in a relaxed condition it has a convex configuration while the container top rim lies in a common plane. In a second embodiment the cover is molded so that in its relaxed condition the top outer ring portion lies in a common plane while the mating rim portion of the container is molded in a convex condition. In a third embodiment the cover and container are molded each with outwardly extending tear-away rim portions which, after the cover is mounted, are sealed to each other to provide a hermetic seal of the container and contents. In yet another embodiment an inner sealing bead is made bifurcated so as to form two sealing ring portions when the cover is mounted on the container.

3,817,421

INSTALLATION FOR THE VENTING OF FUEL TANKS

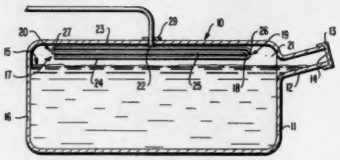
Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengeselischaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 10, 1971, Ser. No. 179,493

Claims priority, application Germany, Sept. 11, 1970 2045004

Int. Cl. B65d *25/00*; F16k *45/00*

U.S. Cl. 220—85 VR 5 Claims



A vent system for fuel tanks, especially for motor vehicles, in which two vent lines are connected together within the upper central area of the tank whereby each line section extends from its inlet opening near a respective end of the tank toward the other end and then back toward the connection with the other line section so that each vent line extends at first over a substantial part of the length of the tank before being led back to the center area where the interconnection of the two line sections with each other and with the line leading into the atmosphere takes place.

3,817,422

HARD ICE CREAM DISPENSING MACHINE

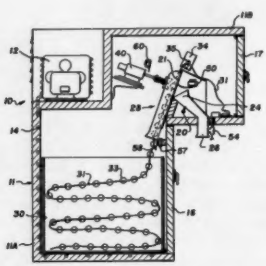
Edward D. Raitt, 5525 Blenheim St., Vancouver, British Columbia, Canada

Filed June 2, 1972, Ser. No. 259,096

Claims priority, application Canada, June 9, 1971, 115170

Int. Cl. B65h *29/54*

U.S. Cl. 221—74 4 Claims



A dispensing machine for scoops of hard ice cream which are prepackaged on a carrier strip and stored in a refrigerated cabinet of the machine. When started by a manually operated control switch, the machine holds the strip against a stationary base plate, ejects an ice cream scoop from the strip causing it to fall down a delivery chute into a cone supported below the chute, and then advances the carrier strip to a predetermined position to complete one operating cycle of the machine.

3,817,423

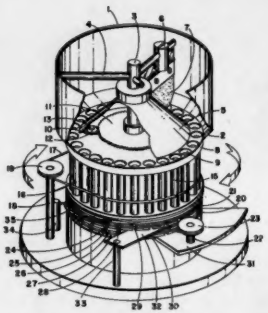
APPARATUS FOR CONTINUOUSLY RECTIFYING TWO-PIECE HARD CAPSULES

Hugh P. McKnight, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 31, 1973, Ser. No. 328,184

Int. Cl. B65h *9/00*

U.S. Cl. 221—173 15 Claims



Apparatus for continuously rectifying two-piece hard capsules comprising a stationary receptacle for holding randomly-oriented two-piece hard capsules in communication with and cooperating with a laterally reciprocating rotatable feeding element having a plurality of equi-spaced openings therein, said openings in essentially axial alignment with a concentrically rotatable circular bank of cooperating vertical tubes into which said capsules are fed, means for delivering said capsules to a rectifying element which orients said capsules into a position wherein the body section thereof is directed toward the exit from said apparatus, and means for ejecting said capsules therefrom.

3,817,424

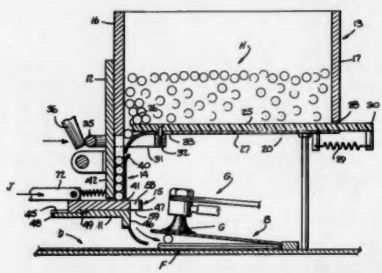
CYLINDRICAL OBJECT DISPENSER HAVING RECIPROCATING TRAP CHAMBER

Albert R. Blundin, Magnolia, N.J., assignor to U.S. Pencil and Stationary Co., a division of Cadence Industries Corporation, Shellyville, Tenn.

Filed June 30, 1972, Ser. No. 267,804

Int. Cl. B65g *59/02*

U.S. Cl. 221—175 8 Claims



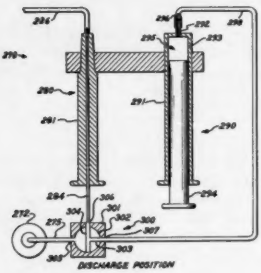
An apparatus for selectively discharging an object such as a ball-point pen from a supply of such objects to be stored in a hopper of the apparatus. The hopper has a bottom member mounted for selective recirpocation along a substantially horizontal path to and from a closed position for releasing at least one of the objects therefrom. The objects released from

the hopper are collected in a vertically extending chute and are positioned therein one above another on top of the bottommost object in the chute. A plunger is mounted beneath the chute for selective movement between a first position and a second position. When the plunger is in the first position, the bottommost object is dropped from the chute into a passage defined in one end of the plunger. When the plunger moves to the second position, the bottommost object drops from the passage and is thus selectively discharged from the apparatus.

3,817,425
CHEMICAL DISPENSER

Max D. Liston, Irvine, Calif., assignor to Abbot Laboratories, North Chicago, Ill.

Division of Ser. No. 133,081, April 12, 1971, abandoned. This application May 3, 1973, Ser. No. 357,065
Int. Cl. G01f *11/16*
U.S. Cl. 222—1 **10 Claims**

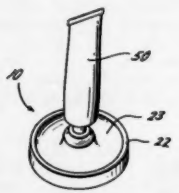


The disclosure describes a specimen dispenser in which first and second syringes are used to dispense a sample liquid and a reagent liquid. The inlet orifice of the second syringe is connected to a second end opening of the first syringe through a three-way valve so that the first syringe is purged by reagent liquid each time a dispensing operation is completed.

3,817,426
TUBE HOLDER

Michael T. Fooks, 6411 Heatherbloom, Houston, Tex. 77045

Filed June 16, 1972, Ser. No. 263,525
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **2 Claims**

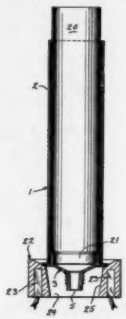


A holder for a tube of a thickened liquid, including a vertical prong surrounded by a container or reservoir, all being formed as a central part or extension of an annular support.

3,817,427
TOOTHPASTE TUBES AND SIMILAR TUBULAR CONTAINERS AND METHODS FOR THEIR MANUFACTURE

Robert O. Neff, Milwaukee; Kenneth V. Morrison, Brookfield, and William D. Groechel, Whitefish Bay, all of Wis., assignors to Milprint, Inc., Milwaukee, Wis.

Filed Dec. 27, 1971, Ser. No. 211,903
Int. Cl. B65d *35/10*
U.S. Cl. 222—107 **2 Claims**

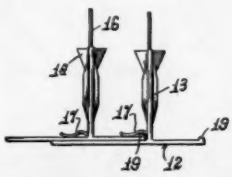


Tubular containers comprising a tube of flexible packaging material joined to a closure member inserted in one end thereof. The closure member includes (1) an annular skirt to which the tube may be joined, and (2) a radially extending flange that extends around the circumference of the tube and projects beyond the exterior surface of the tube to form a portion that is adapted to be thermally reflowed around the end and exterior side portions of the tube to thereby conceal the junction of the tube and the closure member. Several methods for heat sealing the tube to the closure member are shown, including a heat seal between the exterior of the tube and a portion of the radially-extending flange. The tubular body may be made from a sheet of material folded into a tube with its edges joined together in a longitudinal seam, several forms having particular utility being shown herein. A method for the manufacture of tubular containers employing a closure member of the aforesaid construction includes the steps combining the tubular body and the closure member and thereafter reflowing the radially-extending flange about the outer surface of the tubular body through the application of heat.

3,817,428
MEDICAMENT DISPENSER

Daniel T. Buckley, N75W22109 Cherry Hill Rd., St. Charles, Ill. 53089

Filed June 15, 1972, Ser. No. 263,141
Int. Cl. B67d *5/22*
U.S. Cl. 222—173 **11 Claims**

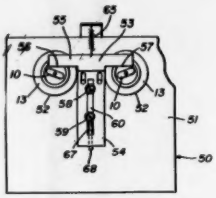


A dispenser for medicaments having a base and an upstanding container for the medicament. The dispenser includes means for attachment of a record card and a detachable tear-strip for bearing data on date of purchase, etc.

3,817,429
ACTUATOR FOR AEROSOL CAN VALVE

Thomas J. Smrt, Rt. 1, Box 46a, Bartlett, Ill. 60103

Continuation-in-part of Ser. No. 152,903, June 14, 1971, abandoned, which is a continuation-in-part of Ser. No. 118,351, Feb. 24, 1971, Pat. No. 3,700,144. This application Oct. 28, 1971, Ser. No. 193,433
Int. Cl. B65d 83/06
U.S. Cl. 222—402.22 5 Claims

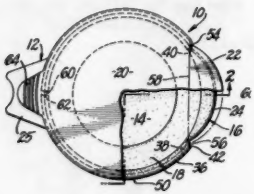


An actuator for an aerosol can valve is adapted to dispense the contents of the can when the valve is moved laterally. The actuator is generally T-shaped and includes an elongated aligning portion having a pair of spaced-apart generally parallel flat sides and a pair of ends and an attaching portion extending transversely from the aligning portion intermediate the ends thereof. A central bore extends through the attaching and aligning portions and terminates in an elongated spraying slot in the aligning portion which extends parallel to the flat sides of the aligning portion. The central bore is adapted to receive the laterally movable stem of an aerosol can valve, and the attaching portion terminates in a pair of converging beveled surfaces which extend in directions which are generally parallel to the longitudinal axis of the spraying slot.

3,817,430
CARAFE WITH SELF-SEALING SPOUT

Harlan F. Borin, 1326 Yellowstone Dr., Lake Arrowhead, Calif. 92321

Filed Apr. 24, 1972, Ser. No. 246,573
Int. Cl. B65d 5/72
U.S. Cl. 222—494 13 Claims

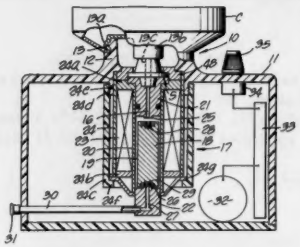


A receptacle for storing and dispensing liquids comprising a disposable plastic cup and a disposable plastic lid releasably secured over a top of the cup. A flat flexible and resilient flap extends forward from the lid to engage an upper edge of and normally seal a spout extending from the cup. The flap is adapted to automatically lift from the spout as the cup is tipped and liquid presses thereagainst for dispensing from the receptacle through the spout.

3,817,431
SEAL FOR PRESSURIZED DISPENSING APPARATUS

William G. Kempton, 1855 Sherungton Pl., No. 106, Newport Beach, Calif. 92660

Filed July 19, 1972, Ser. No. 273,175
Int. Cl. B65d 83/14
U.S. Cl. 222—542 6 Claims

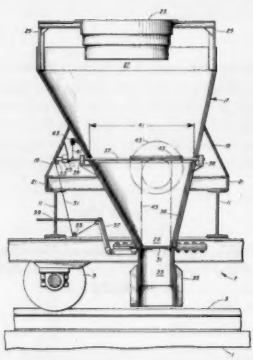


A resilient seal is interposed between a cyclical dispenser and the pressurized container for the material to be dispensed, and all surfaces are sealed to prevent loss of pressurized gas or the material to be dispensed.

3,817,432
FLOW PROMOTING DEVICE FOR BATCH HOPPERS

Imre Szendroi, Allentown, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 23, 1972, Ser. No. 237,316
Int. Cl. B65g 65/70
U.S. Cl. 222—564 7 Claims



An apparatus for minimizing arching of granular material within a gravity operated, batch-type hopper. A plate rotatable about a horizontal shaft is mounted within the hopper above a bottom discharge opening. Prior to charging the plate is rotated to a horizontally extending position and during discharging to a vertically extending position.

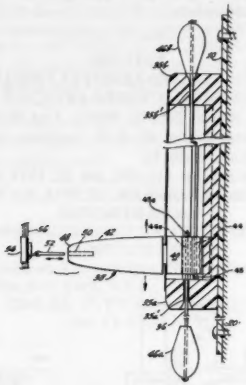
3,817,433
MEANS FOR OPERATING GARMENT SLIDE FASTENER

Edward E. Thomas, 158 Donner Ave., Ventura, Calif. 93003

Continuation of Ser. No. 165,994, July 26, 1971, abandoned. This application Jan. 19, 1973, Ser. No. 325,023
Int. Cl. A47j 51/06
U.S. Cl. 223—111 5 Claims

A nose-like element is provided with an orifice in its tip to receive and hold a slide fastener or zipper tab. When this ele-

ment is disposed substantially perpendicularly to the back of a woman desiring to zip or unzip her dress or other garment, and with the zipper tab so inserted in its orifice, is moved in that disposition along the interlocking elements of the slide fastener, the desired zipping or unzipping of the garment is conveniently accomplished. In the preferred embodiment



movement of the element is accomplished by its mounting on some type of track means and providing a drawstring to move it up or down on such track means. In a more simple embodiment, the element may be adjustably mounted with a slight cant on the end of an elongated member to be held in one's hand and operated in the manner of a "back scratcher."

3,817,434

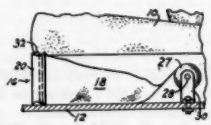
CONCEALED AUTO LITTER RECEPTACLE

James J. Dickman, 2715 Durham Rd., York, Pa. 17402

Filed Dec. 14, 1972, Ser. No. 314,946

Int. Cl. B60r *11/00*; **B65b** *67/04*

U.S. Cl. 224—42.42 A **4 Claims**



A litter receptacle for automobiles, including the cabs of trucks, buses and the like and having flexible supporting means substantially in the form of an oval loop to which the open end of a flexible, bag-like container is connected. Opposed portions of the loop are respectively engageable with spaced elements or surfaces on a vehicle, such as the lower rim of the front seat and the floor, whereby the flexibility of the supporting means serves to retain the container in a readily available position while disposed in a concealed area in the auto or other vehicle.

3,817,435

TANK HOLDER AND TRANSPORTER

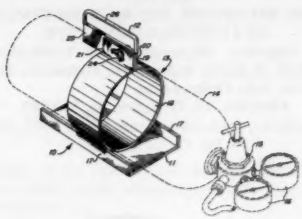
Anthony F. De Luca, 2537 E. Clarendon Ave., Phoenix, Ariz. 85016; Eugene F. Creach, 1339 N. 36th Ave., Phoenix, Ariz. 85009, and Michael H. Jones, 3802 N. 28th St., Phoenix, Ariz. 85016

Filed Mar. 23, 1972, Ser. No. 237,429

Int. Cl. B65d *87/00*

U.S. Cl. 224—45 AA **6 Claims**

This holder and transporter is for one or more tanks of the type containing oxygen and acetylene gases. Basically, it comprises a base, a handle and means connecting them, the latter serving to receive and secure at least one tank to the assembly. More specifically, the base is of channel shape to provide rigidity, the tank receiving means being a split band to encircle the tank and provide separated ends which are perforated to receive a fastener used in clamping the band to the tank, one



of the ends having a handle formed thereon. The handle is offset relative to the band to provide a selected balance between the handle and the tank. If desired, the base may be shaped to give increased strength to light-weight material and provide spaced supporting surface engaging portions which make the holder stable on uneven surfaces. The holder may be adapted for use on a plurality of tanks.

3,817,436

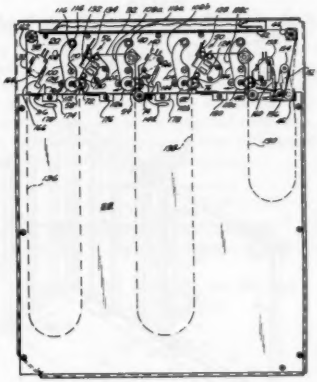
DICTATING AND TRANSCRIBING SYSTEM

Bjorn J. Matz, Forest Hills, N.Y.; Theodore P. Nenninger, East Brunswick, N.J.; James C. Whitney, Fairfield; Anthony Ciaraldi, Stanford, both of Conn., and Leslie N. Wilder, New Rochelle, N.Y., assignors to Dictaphone Corporation, Rye, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,928

Int. Cl. B65h *25/00*

U.S. Cl. 226—25 **8 Claims**



A dictating and transcribing system is provided with means for recording and transcribing and including a single-bin, random-wind tape storage magazine to store an endless loop of magnetic tape in random folds. The tape is drawn from the magazine at one side, passed over the top of the apparatus, back into the magazine and out of the magazine through a dictate-playback station. After passing through the dictate-playback station the tape is returned to the magazine where it may be stored in random-wound folds until a transcribe station is activated to draw the tape from the magazine through the transcribe station and back into the magazine where it is

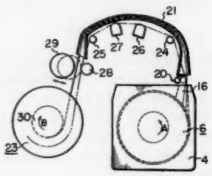
stored awaiting further dictation. Both the dictate-playback station and the transcribe station are provided with bidirectional tape drive capability and tape tautness sensors are provided to control dictate and transcribe functions according to the sensed tape tautness.

3,817,437

MAGNETIC RECORDING AND REPRODUCING SYSTEM OF AUTOTHREADING TYPE

Michinori Nagahiro, Nishinomiya, and Yoshinobu Nakata, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 28, 1972, Ser. No. 310,002
Claims priority, application Japan, Dec. 1, 1971, 46-097360
Int. Cl. G03b *1/56*
U.S. Cl. 226—91 **3 Claims**



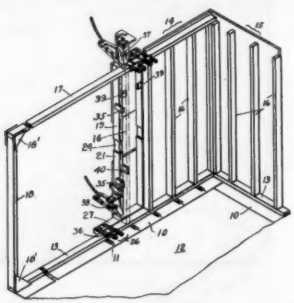
A magnetic recording and reproducing system of autothreading type using a magnetic tape provided at the pay-off end of the magnetic tape with a leader tape having greater rigidity than the magnetic tape. The leader tape is wound on a pay-off reel and a take-up reel so that its opposite sides may face the cores of the pay-off and take-up reels, respectively, thereby ensuring that its tip may be readily separated from the periphery of the tape roll on the pay-off reel.

3,817,438

APPARATUS FOR CONSTRUCTING STUDDED WOODEN WALLS

Owen E. Raab, 11825 Glendale Way, S., Seattle, Wash. 98168

Filed July 10, 1972, Ser. No. 270,530
Int. Cl. B27f *7/02*
U.S. Cl. 227—152 **6 Claims**



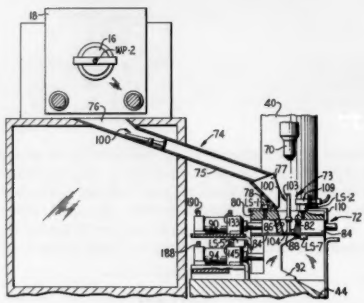
The apparatus used includes a master tape for each wall. This tape has on it a full scale lay out showing the positions of studding and other components of the wall. Also, for each floor of the building, pre-formed wall sections to be used to erect a starting corner are provided and a carriage to be supported on and moved along the wall and having on it stud member stop and positioning means and nailing machines is provided. The apparatus can be used by constructing a subfloor with floor plates where walls are to be erected, placing the master tape on the sub-floor alongside of floor plates, erecting the starting corner and using it to support one end of a ceiling plate which is spaced directly above and is parallel to a floor plate, supporting the carriage on the ceiling and floor plates, moving the carriage to successive positions as indicated on the master tape, placing the studding against the stop and positioning means and using the nailing machines to nail the studding to the two plates.

3,817,439

APPARATUS FOR FLASH REMOVAL FROM HEAT AND PRESSURE WELDED ARTICLES

Jozef Kiwalle, Peoria; Paul H. Merrit, East Peoria, and Edward J. Sluetz, Peoria, all of Ill., assignors to Production Technology Inc., Peoria, Ill.

Division of Ser. No. 110,558, Jan. 28, 1971, Pat. No. 3,725,997. This application Jan. 15, 1973, Ser. No. 323,342
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **7 Claims**



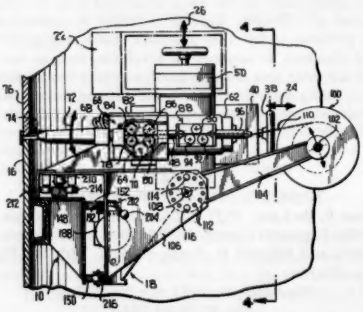
Flash is removed from a friction welded article while the flash still has residual heat from the welding operation. The welded article is rapidly transferred from the weld zone to a flash removal tool after the weld is made. The flash removal tool is automatically actuated as the article is transferred to the tool.

3,817,440

AUTOMATIC WELDING APPARATUS

John E. Bartley, Aptos, Calif., assignor to Zeta International Engineering, Inc., Santa Clara, Calif.

Filed Aug. 21, 1972, Ser. No. 282,025
Int. Cl. B23k *5/00*
U.S. Cl. 228—29 **6 Claims**



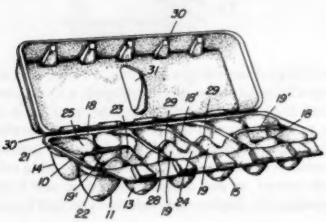
An automatic welding apparatus includes a track assembly of sectional arcuate form having air-inflatable pads for react-

ing against a cylindrical surface to hold the apparatus in place. The track assembly presents circular tracks and a circular rack and a carriage assembly is supported on the tracks. A drive motor and associated drive gear is movably carried by the carriage assembly for movement into and out of operative engagement with the rack and the welding assembly is adjustably positioned and supported by the carriage assembly for radial in and out movement with respect to the cylindrical surface and an adjacent joint to be welded as well as up and down in a plane axial with respect to the cylindrical surface. The welding assembly includes a welding head which is mounted for angular adjustment with respect to the cylindrical surface in an axial plane and a spool of welding wire is swingably carried by the carriage assembly so as to remain aligned with the welding head to obtain a substantially straight and axial infeed of wire to the welding head.

3,817,441
HIGH-PROTECTION EGG CARTON CELLULAR CONFIGURATION

William B. Jackson, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed July 19, 1971, Ser. No. 163,791
Int. Cl. B65d *1/24*
U.S. Cl. 229—2.5 **1 Claim**



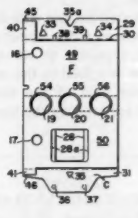
An egg carton, having two rows of cavities of six each, that has the individual cavities separated from each other longitudinally and transversely by a combination of transversely and longitudinally extending walls, the walls having sloping sides and meeting at a point intermediate the depth of the cavities to provide for easy egg removal. In addition to the wall separator members, the cellular bottom portion of the carton is further characterized by having a number of upwardly projecting tips to provide for individual egg separation.

3,817,442
WITHDRAWING A PAIR OF BLANKS SIMULTANEOUSLY FROM A HOPPER

Marinus Leys, Bilderdyklaan, and Jacobus A. Van Den Houte, Saksenweimarlaan, both of Netherlands, assignors to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 883,387, Dec. 9, 1969, abandoned.
This application Oct. 12, 1971, Ser. No. 188,513
Int. Cl. B65d *65/00, 75/38*
U.S. Cl. 229—40 **1 Claim**

For withdrawing a pair of blanks from a hopper simultaneously, a feeder blank is disposed within the hopper adjacent the outlet part thereof and is constructed and arranged in face contacting relationship with a companion blank in such manner that movable suction means is afforded access to an area of the companion blank so that withdrawing movement of the suction means imparts withdrawing movement to both the feeder blank and the companion blank simultaneously by a single withdrawal stroke of the suction means. Both blanks are adapted for movement in a direction different from the direction of withdrawal movement of the blanks as by means of a pair of feeder chains. Stabilizing tabs are formed along the

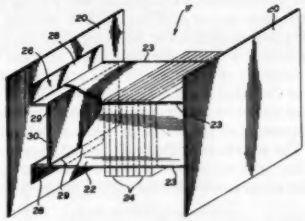


end portions of the feeder blank adjacent the trailing edge thereof to insure proper engagement of the feeder blank by the feeder chains.

3,817,443
RETURNABLE CARTON

James R. Miller, Boonville, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed June 26, 1972, Ser. No. 266,001
Int. Cl. B65d *5/36, 13/04*
U.S. Cl. 229—41 R **2 Claims**

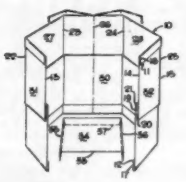


A totally returnable carton has a collapsible material mounting assembly containable internally of the collapsible return carton whether the carton is collapsed or uncollapsed. When it is collapsed, the material mounting assembly fits into the base of the collapsed returnable carton and when it is uncollapsed it fits internally of the extended returnable carton to provide a material mounting tube whose wall panels reinforce the extended walls of the returnable carton.

3,817,444
SIDE OPENING CONTAINER

James J. Yoch, No. 6 Algonquin Estates Rd., St. Louis, Mo. 63122

Filed Oct. 26, 1971, Ser. No. 192,203
Int. Cl. B65d *5/44*
U.S. Cl. 229—48 R **8 Claims**



The container includes sidewalls having upper and lower hems and side margin portions which are overlappingly and

detachably attachable to close the container. An expansion pleat provides the container with an adjustable length and the overlapping connection of the hems provides the container with an adjustable girth.

The container is adapted for use with a disposable liner and includes attachment means at the upper end capable of holding liners of varying capacity in an open condition. The disposable liner can be attached to the container by plugs or, alternatively, the upper hem of the container can be frictionally faced to facilitate holding the liner in the open condition.

3,817,445

EXPANDABLE MAILING ENVELOPE ASSEMBLY

Craig P. Greason, Huntington, N.Y., assignor to Graphos Techni-Services, Inc., Hungtington, N.Y.

Filed July 27, 1972, Ser. No. 275,659

Int. Cl. B65d *27/16; 27/10*

U.S. Cl. 229—70 **7 Claims**

A mailing envelope assembly adapted for machine processing is formed from a continuous web having a separable perforated strip on one edge for machine feeding. The envelope is separably joined to the feed strip, and has front and back panels joined at the longitudinal edge adjacent the feed strip by an adhesive stripe between one panel and a folded-under edge of the other panel. The other longitudinal edges of the panels are joined by an accordian or similar reentrant fold to permit expansion of the envelope without deformation of the panels. The panels are adhesively joined together at one end, and a flap with resealable adhesive and adapted to fold over the other panel is provided for sealing the envelope.

ERRATUM

For Class 232—43 see:
Patent No. 3,817,448

3,817,446

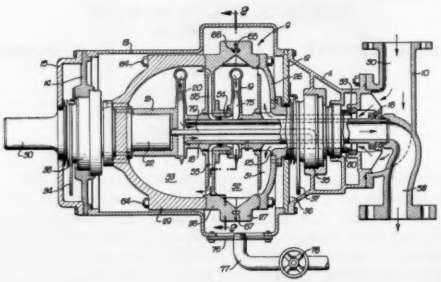
PITOT PUMP WITH CENTRIFUGAL SEPARATOR

John W. Erickson, Huntington, and Vitolis Budrys, La Mirada, both of Calif., assignors to Kabe, Inc., Huntington Park, Calif.

Filed Jan. 8, 1973, Ser. No. 321,709

Int. Cl. B04b *3/00*

U.S. Cl. 233—2 **10 Claims**



A pitot pump, i.e., a centrifugal pump comprising a rotating casing, means for delivering the fluid to be pumped to the interior of the casing, a pitot tube fixed within and extending radially of the rotating casing, and a discharge duct for the pitot tube coaxial with the rotating casing. A structure for removing heavier material from the fluid being pumped and including a plurality of peripheral nozzles in the rotating casing, an annular passage feeding the nozzles, and a plurality of strainer passages feeding the annular passage from the interior of the rotating casing.

3,817,447

CENTRIFUGE

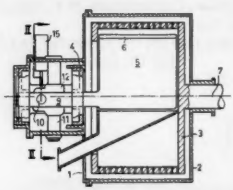
Ernst Hausmann, Horgen, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Jan. 22, 1973, Ser. No. 325,139

Claims priority, application Switzerland, Jan. 24, 1972, 967/72

Int. Cl. B04b *11/08*

U.S. Cl. 233—7 **9 Claims**



A centrifuge comprising a housing, a drum, and a knife for stripping a layer of material centrifuged; a knife carrier journalled in a holding part being pivotable mounted in said housing; the journal axis and the pivot axis being parallel to, and apart from each other; a guiding part being guided on said knife carrier so as to be translatorily displaceable relatively to said knife carrier, as well as being guided on said housing so as to be translatorily displaceable relatively to said housing.

3,817,448

GARBAGE RECEPTACLE

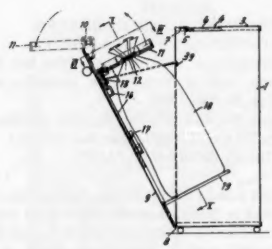
Walter Schneider, Alte Dorfstr. 4, 8135 Langnau a/A, Zurich, Switzerland

Filed Nov. 4, 1971, Ser. No. 195,579

Claims priority, application Switzerland, Nov. 6, 1970, 16524/70; Austria, July 29, 1971, 6619/71

Int. Cl. B65d *91/00*

U.S. Cl. 232—43.2 **4 Claims**



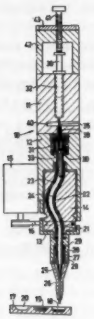
A garbage receptacle includes a container with a hinged top giving access to a sack suspended from a holding frame, the rim of the sack mouth being crimped over a holding frame which is fastened to a hinged side door of the container. A closure mechanism mounted on the frame, such as a contractile

peripheral spring (12, FIG. 2) or a pair of coacting oppositely bent spring-loaded rods (27, 28, FIG. 10), is controlled by draw strings attached to a slide which is normally held by a latch spring in a tensioning position to keep the mechanism from closing around the neck of the sack. Preparatorily to removing the sack from the container, the side door is swung out whereupon the slide can be unlatched to release the closure mechanism which tightens around the sack neck to facilitate tying thereof by cords or the like.

3,817,449
CENTRIFUGE

Johan Erik Hayden Westberg, Lidingo, and Hans Peter Olof Unger, Stockholm, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Feb. 15, 1972, Ser. No. 226,591
Claims priority, application Sweden, Feb. 19, 1971, 2157/71
Int. Cl. B04b *1/00*
U.S. Cl. 233—27 **8 Claims**



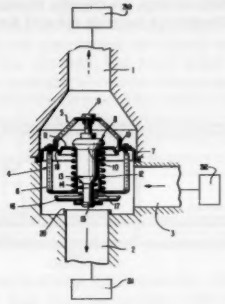
A centrifuge for treating a fluid, particularly a fluid containing heavier corpuscles in suspension, such as blood, includes a rotor rotatable about a spin axis and a motor for operable to rotate the rotor. A flexible tube extends through the rotor and has end portions extending from the ends of the rotor coaxially with the spin axis, the flexible tube, between the end portions thereof and within the rotor, being bent radially outwardly of the spin axis to form a bend with the radially outermost bend portion forming the treatment chamber. The tube is supported for rotation about its own axis independently of rotation of the rotor, and injection means are provided to supply fluid to be treated to the treatment chamber, with discharge means being connected to the tube to discharge treated fluid from the treated chamber into receptacles in a dish. Selectively operable brakes are engageable with the tube to cause the tube, during spinning of the rotor, to be decelerated to rotate about its own axis relative to the rotor.

3,817,450
THERMOSTATICALLY CONTROLLED VALVE ESPECIALLY FOR ENGINES OF MOTOR VEHICLES

Arthur Mischke, Ruit Esslingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Apr. 13, 1971, Ser. No. 133,567
Claims priority, application Germany, Apr. 14, 1970, 2017759
Int. Cl. F01p *7/16*
U.S. Cl. 236—34.5 **17 Claims**

A thermostatically controlled valve with a valve main closure disc and a valve short-circuit closure disc, especially for the cooling water overflow line from the engine to the radiator of a motor vehicle which is characterized by the combination

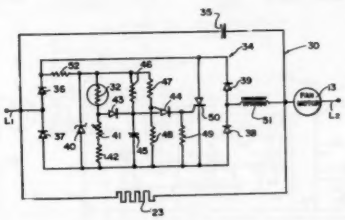


of an anticipatory control and of a knife edge seat of the valve ring with a sharp edge, in which the edge and/or the abutment surface for the edge consist of highly resistant, non-oxidizing material.

3,817,451
AIR CONDITIONER CONDENSING SYSTEM CONTROL

Robert W. Ramsey, Nashville, Tenn., assignor to Heil-Quaker Corporation, Lewisburg, Tenn.

Division of Ser. No. 133,276, April 12, 1971, Pat. No. 3,735,602. This application Jan. 15, 1972, Ser. No. 323,436
Int. Cl. F24f *7/00*
U.S. Cl. 236—49 **8 Claims**



An air conditioner condensing system control having a motor driven means for flowing cooling air in heat transfer association with a condenser thereof. The operation of the motor is controlled by a resistance means in series therewith and disposed in heat transfer association with the air flowed by the air flowing means. The control means further includes means for providing an adjustable additional voltage to the motor for modulating the speed thereof. The additional voltage supply means may comprise an inexpensive gated control element adapted to control only a portion of the total maximum power supply voltage to the motor. Means are provided for sensing the temperature of the condenser at a liquid-gas interface therein for controlling the gated control element.

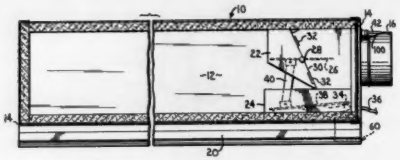
3,817,452
DUCT PRESSURE ACTUATED VARIABLE VOLUME DEVICE

Frank J. Dean, Jr., Kansas City, Mo., assignor to Tempmaster Corporation, Kansas City, Mo.

Filed Jan. 26, 1973, Ser. No. 327,011
Int. Cl. F24f *11/04*
U.S. Cl. 236—49 **8 Claims**

A self contained unit for controlling the volume of airflow through an air duct ventilation system has an inflatable bag

which is operated by the pressure of airflow in the duct to variably position a normally open damper and control airflow through the duct. Inflation of the bag pivots an overlying plate and connecting linkage to reliably position the damper. A pneumatic thermostat controls exhaust flow from the bag to



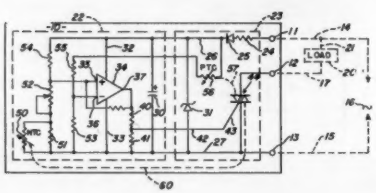
adjust pressure therein. An aspirating nozzle in the thermostat is fed with relatively high velocity airflow from the duct, and by aspiration induces a flow of ambient air through the thermostat and across a bimetallic, thermally responsive control element thereof which moves in response to changes in temperature to vary pressure in the bag.

3,817,453

SOLID STATE THERMOSTAT WITH DROOP COMPENSATION

B. Hubert Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 8, 1973, Ser. No. 321,504
Int. Cl. G05d *23/30*
U.S. Cl. 236—68 C **10 Claims**



A solid state thermostat which has a temperature compensating arrangement for the heat generated by the output solid state triac. The temperature compensating arrangement eliminates the droop or offset that would otherwise be created by the heat from the solid state switch affecting the temperature sensor, shown as either a negative or a positive temperature coefficient temperature sensitive resistor.

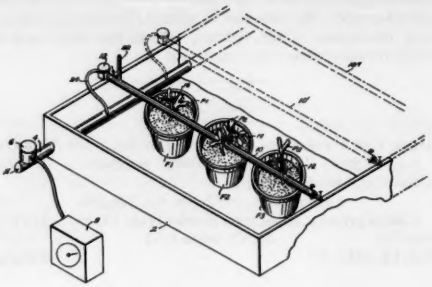
3,817,454

METHOD AND APPARATUS FOR SUBSURFACE AND DRIP IRRIGATION SYSTEMS

Edward S. Pira, 116 Rocky Hill Rd., Hadley, Mass. 01035

Filed Feb. 12, 1973, Ser. No. 331,556
Int. Cl. B05b *15/00*
U.S. Cl. 239—76 **2 Claims**

Fluid materials, particularly of the class employed in subsurface and drip irrigation systems, is supplied under relatively high pressures and conducted through a pressure-reduction stage during which discharge of multiple streams of the fluid takes place. The total volume of the fluid streams and the degree of pressure drop are controlled in relation to one another to reduce and maintain the flow rate of fluid supplied within a range of low velocity flow rates wherein friction losses



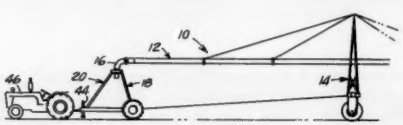
are minimized to a point where pressure change of any appreciable nature is avoided and a substantially uniform release of fluid can be realized at all points along the irrigation system.

3,817,455

CIRCULAR IRRIGATION SYSTEM WITH PORTABLE PIVOT POINT

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

Filed May 25, 1973, Ser. No. 364,084
Int. Cl. B05b *3/00*
U.S. Cl. 239—177 **6 Claims**



An elongated pipe including water discharging means is associated with a tower to be rotatable in a circular path thereabout. The pipe is supported by wheeled means, and the tower is also supported by wheeled means, so that the apparatus may be moved in a relatively convenient manner to any of a variety of positions on land to be irrigated.

3,817,456

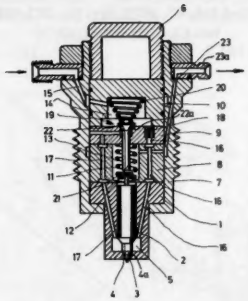
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Jorg Schlappkohl, Lindenbachstr. 43, 7 Stuttgart, Germany

Filed July 17, 1973, Ser. No. 380,099
Claims priority, application Germany, July 18, 1972, 2235083
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **5 Claims**

A fuel-injection nozzle for an internal combustion engine is described, which nozzle comprises a valve needle for controlling the flow of fuel via a throttle passage to a pressure chamber for a preliminary fuel injection out of the nozzle and for controlling of the flow of fuel via duct means to the pressure chamber for a main fuel injection out of the nozzle, during the opening stroke of the valve needle, and which nozzle is improved by valve means closed during rest position which

valve means are mounted in the duct means and associated with the valve needle to be opened by the needle during its opening stroke; the free cross-sectional area of the nozzle



mouth which is traversed by the fuel during the preliminary injection is smaller than the cross-sectional area of said throttle passage.

3,817,457

PROCESSING OF PARTICULATE MATERIALS

Norman Owen Clark, Par, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Feb. 4, 1972, Ser. No. 223,751

Claims priority, application Great Britain, Feb. 10, 1971, 4412/71

Int. Cl. B02c *19/12*

U.S. Cl. 241—4 **15 Claims**

A process for comminuting particulate solid materials by shearing forces in which the particulate solid is subjected to the shearing forces in the form of a plastic mass containing a second particulate solid whose particles are substantially coarser than those of the particulate solid to be comminuted. After completion of the shearing operation, the two particulate solids are separated, for example by diluting the plastic mass with water and then passing the material through a sieve which will retain the coarse particles of the second particulate solid.

3,817,458

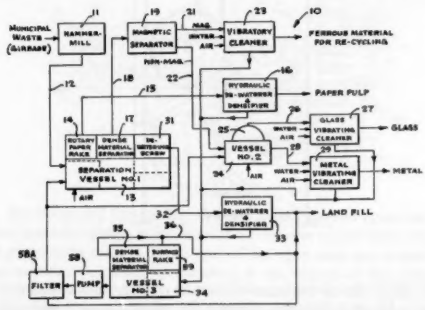
RECYCLING METHOD AND APPARATUS

Matthew J. Gilberto, Glendale Heights, Ill., assignor to Chicago Hydraulics Inc., Addison, Ill.

Filed June 19, 1972, Ser. No. 263,943

Int. Cl. B02c *21/00*

U.S. Cl. 241—20 **14 Claims**



A recycling system for solid municipal waste, in which the garbage is milled to given maximum size, then fed to a three-level flotation separation vessel; in the flotaton separation vessel, paper is raked from the surface, metal, glass and like heavy solids are removed from the vessel bottom by a deep drum separator, and light organic materials are extracted from an intermediate level by a dewatering screw. The paper materials are dried and compressed; the organic materials are treated separately but similarly. The heavy solids are passed through a magnetic separator to recover ferrous metals, which are washed in a vibratory cleaner. The residual heavy solids are fed to a two-level flotation separation vessel to segregate metal from glass on a surface-differential basis; the two outputs of this second vessel are washed in vibratory cleaners.

3,817,459

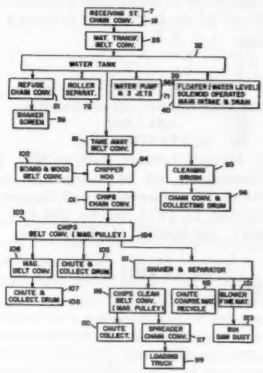
DEVICE AND PROCESS FOR RECLAIMING USED WOOD

David Keller, 7601 14th Ave., Sacramento, Calif. 95820, and Henry Keller, Rt. 1, Box 188A, Sacramento, Calif. 95632

Filed Jan. 2, 1973, Ser. No. 320,274

Int. Cl. B02c *21/00*

U.S. Cl. 241—20 **9 Claims**



A used wood reclaiming device has a receiving means for material including miscellaneous used wood pieces and accompanying debris. The received material is conveyed to a water tank to effect a separation of floating material from sinking material. The sinking material is conveyed away from the tank while the floating material is conveyed to a wood mill shredding the wood pieces into small particles. Metal is magnetically removed. The remaining shredded wood is then carried to a sizing device from which the smaller particles are sent to storage while the larger particles are carried away.

3,817,460

PULVERIZING APPARATUS

Smith Alpha, Berwick, La., assignor to Silver Lining, Inc., Morgan City, La.

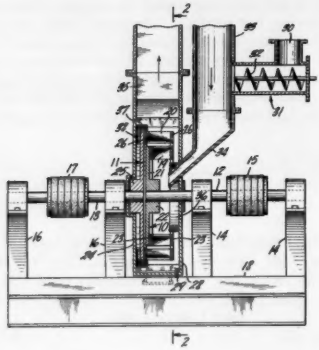
Filed Apr. 7, 1972, Ser. No. 242,154

Int. Cl. B02c *13/06*

U.S. Cl. 241—55 **2 Claims**

A pulverizing apparatus in which inner and outer bladed rotors are driven in opposite directions with the blades arranged

to produce a flow of air from within the inner rotor to a discharge passage outside the outer rotor and in which the

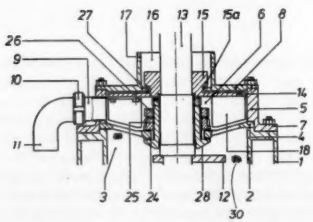


material to be pulverized is introduced within the inner rotor for shearing action by the blades as it is carried toward the discharge passage.

3,817,461
AGITATOR MILL

August Geissel; Richard Lehnert, both of Selb, and Rudolf Forster, Weissenstadt, all of Germany, assignors to Gebruder Netzsch, Maschinenfabrik Selb/Bayern, Germany

Filed Oct. 11, 1972, Ser. No. 296,526
Claims priority, application Germany, Oct. 14, 1971, 2151246
Int. Cl. B02c *13/00*
U.S. Cl. 241—73 **19 Claims**

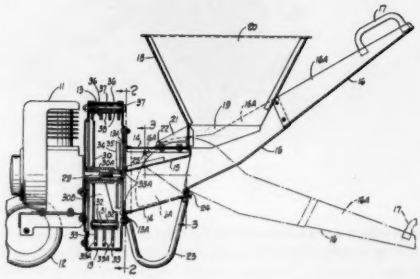


An agitator mill for grinding and/or dispersion of flowable material subjected to grinding comprising an enclosed grinding container in which a charge of grinding particles may be disposed, an outlet chamber communicating with said container and spaced therefrom by a separator which allows passage of only ground material. The said mill also including an agitator extending through the outlet chamber, the separator and into the grinding container. The said agitator in operation being driven by a rotary drive equipped with stirring elements and sealed with respect to the outlet chamber at the point where it passes through said chamber by hydrodynamic sealing disc means secured on said agitator.

3,817,462
SHREDDER

Halley Dale Hamlin, Willoughby Hills, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed July 17, 1972, Ser. No. 272,466
Int. Cl. B02c *13/04, 13/10*
U.S. Cl. 241—101.7 **17 Claims**

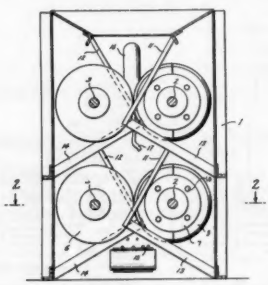


Mechanism for shredding vegetation and such material, including leaves, grass, twigs and the like. There is a chute for supplying the material to the shredding mechanism and a hopper positioned over the chute into which material may be placed. The mechanism includes an impeller, a rotatable blade, and flails carried by the impeller which drive material through spaced fingers carried by the housing.

3,817,463
TIRE SHREDDING DEVICE

Clarence A. Krigbaum, Houston, Tex., assignor to Tire-Gator, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 134,717, April 16, 1971, Pat. No. 3,727,850. This application Sept. 15, 1972, Ser. No. 282,191
Int. Cl. B02c *13/02, 19/00*
U.S. Cl. 241—152 R **2 Claims**



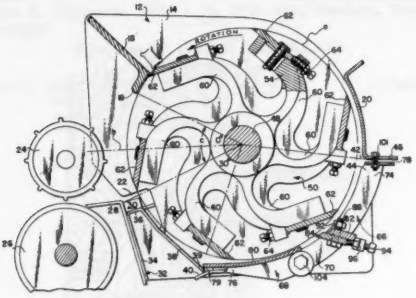
A device for shredding used tires to reduce the tires to small pieces for easy disposal, wherein the whole tires are reduced to strips by cutters and tear strips, and subjected to a second treatment to reduce the strips to small pieces by cutting and tearing.

3,817,464

SINGLE BLADE RECUTTER FOR FORAGE HARVESTER

Eugene A. Sousek, Appleton, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Nov. 27, 1972, Ser. No. 309,678
Int. Cl. B02c *18/06*
U.S. Cl. 241—222 14 Claims



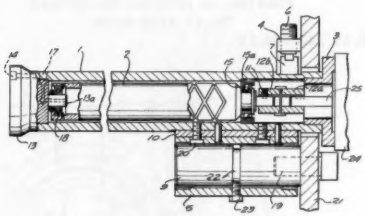
A forage cutter includes a housing having a pair of end walls, a forward inlet for receiving forage material and a rearward outlet for discharging forage material. A rotary cylinder shaft is journaled for rotation in the end walls, and a rotary cylindrical cutter having a plurality of cutting knives is mounted on the shaft for rotation about its longitudinal axis. The cutting knives are movable in a 360° cylindrical cutting path having a 0° reference on a horizontal plane extending radially from the axis of the cutter through the forward inlet. A recutter having a single recutter blade disposed at the outlet of the housing is positioned in coacting shearing relation with the cutting knives. The recutter blade is horizontally positioned between about 120° to 150° from the horizontal plane in the direction of the cylindrical cutting path.

3,817,465

WINDER TRAVERSE FOR FILAMENTARY MATERIAL

Harry B. Miller, Hopedale, Mass., assignor to Industrie-Werke Karlsruhe Augsburg AG, Karlsruhe, Germany

Continuation-in-part of Ser. No. 262,973, June 15, 1972. This application Nov. 6, 1972, Ser. No. 304,255
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 7 Claims



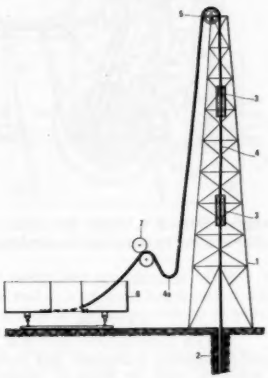
An elongated tubular housing has axially spaced open ends and accommodates in its interior a rotatable cylindrical cam. A removable closure closes one of the open ends and a pivot arrangement engages the housing in the region of the other open end so that the housing can pivot about an axis which is offset from but parallels the longitudinal axis of the housing. A motor is arranged adjacent the other open end and its output shaft is coupled by a disengageable coupling arrangement with the cam which it rotates.

3,817,466

DEVICE FOR POSITIONING THE TURNS FORMED BY A COILED FLEXIBLE ELONGATED MEMBER STORED IN A ROTATABLE ANNULAR BASKET

Remi Reynard, Montesson, and Pierre Grolet, Orgerus, both of France, assignors to Institut Francais Du Petrole, Des Carburants Et Lubrifiants, Rueil-Malmaison, France

Filed Aug. 25, 1972, Ser. No. 283,670
Claims priority, application France, Aug. 27, 1971, 71.31273
Int. Cl. B65h *54/80, 75/00;* E21b *17/00*
U.S. Cl. 242—54 6 Claims



Device for positioning the turns formed by a coiled flexible elongated member stored in a rotatable annular basket of vertical axis and having two coaxial vertical frames disposed around the axis, said device comprising cylindrical walls coaxially placed between said frames each of said frames and wall being constituted by a stationary sector and a movable sector which is complementary to the stationary sector and articulated at one end of the later, eash said moveable sector having three positions allowing the winding of the elongated member substantially along the profile of a spiral.

3,817,467

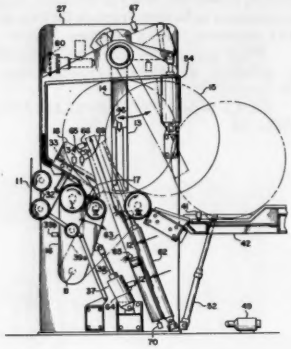
DEVICE FOR CONTINUOUS WINDING OF CONTINUOUSLY RUNNING WEBS OF MATERIAL

Jurgen Dambroth, 3141 Gut Wienbuttel uber Luneburg, Germany

Continuation-in-part of Ser. No. 45,057, June 10, 1970, abandoned. This application June 30, 1972, Ser. No. 267,811
Claims priority, application Germany, June 11, 1969, 1929570
Int. Cl. B65h *19/20, 17/08*
U.S. Cl. 242—56 R 6 Claims

A multiple roller winding apparatus for the continuous winding of a continuously moving web of material. The material is wound onto take-up rollers which are fed from a magazine to driving rollers, and are disposed during the winding operation in a wedge formed between the driving rollers. A cutting means is provided for cutting the web of material when it reaches a predetermined diameter, and a feed means is utilized to start the web of material on a new take-up roller. An intake roller and an auxiliary winding roller are pivotably mounted on the winding apparatus and are movable between two different positions with respect to a stationary delivery

roller so that in a first position a starting wedge is formed by the intake roller and auxiliary roller, and in the second position a wedge is formed between the intake roller and the delivery roller in order to complete the winding operation.



3,817,468

WEB TENSIONING DEVICE

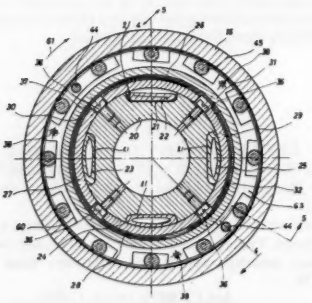
Albert Emiel Smolderen, Aartselaar, and Joseph Marie Cappuyns, Berchem, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Sept. 29, 1971, Ser. No. 184,869

Claims priority, application Great Britain, Sept. 30, 1970, 46547/70

Int. Cl. B65h *19/04, 75/18*

U.S. Cl. 242—56.9 **6 Claims**



The invention describes a device for winding up strips of photographic film after this latter has been cut longitudinally. The invention is characterized by a uniform distribution of the radial forces exerted upon the winding cores, so that each core is wound-up under conditions of uniform tension. The equal radial force is obtained by pressing air into axially situated flexible, elastic tubes, exerting a constant radial pressure upon brake shoes contacting carrier members for cores of spools onto which the film strips are wound.

3,817,469

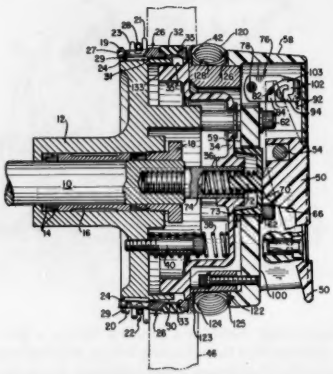
SELF-POSITIONING REEL LATCHING HUB

Roger Mosciatti, Coram; Thomas P. Foley, and John J. Buyaskas, both of Huntington, all of N.Y., assignors to Bucode, Inc., Hauppauge, N.Y.

Filed May 11, 1973, Ser. No. 359,451

Int. Cl. B65h *17/02*

U.S. Cl. 242—68.3 **4 Claims**



Self positioning of a tape reel on a motor driven reel hub is accomplished by providing a helical coil spring which is partially captured within a groove which extends about the periphery of the hub housing. The coils of the spring are laid in the groove so as to form an angle with the radial axis of the hub housing. The angled coils, which are deflected by passing a tape reel over them, exert a force on the tape reel which by snap action properly positions the reel on the hub.

Latching of a tape reel onto a hub is accomplished by the engagement of a set of pivotally mounted latching elements positioned about the periphery of the hub base by a spring loaded piston element which urges the latching elements into engagement with the inner surface of the tape reel. The two-position (latched and unlatched) actuating lever is controlled by a unique cam element.

3,817,470

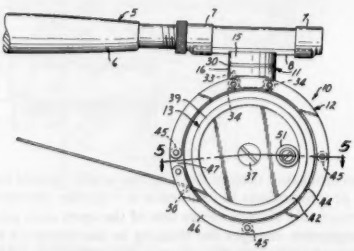
FLY FISHING REEL

Clyde D. Calhoun, Grant Twp., Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 12, 1972, Ser. No. 297,015

Int. Cl. A01k *89/00*

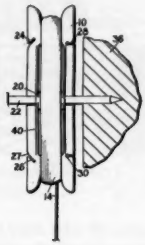
U.S. Cl. 242—84.2 B **1 Claim**



A fishing reel having a cage surrounding a spool as in a conventional fly fishing reel, with the exception that the outer flange of the spool has a reduced diameter, spacing it from the guide ring and that the outer guide ring is severed to permit

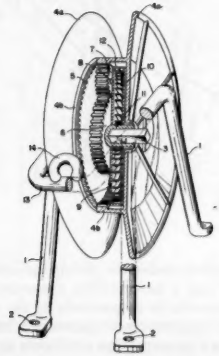
the line to be moved from between the rings to a position between the outer flange and the outer ring. The reel is also provided with a mounting structure permitting the reel to be pivoted on an axis normal to the axis of the spool.

3,817,471
LINE HOLDER
Tyko K. Finneman, 3226 S. E. 25th Ave., Portland, Oreg. 97201
Filed May 15, 1972, Ser. No. 253,542
Int. Cl. B65h 75/06
U.S. Cl. 242—85.1 2 Claims



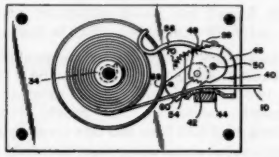
A line holder capable of holding a supply of line and including structure in which a portion of the line is adapted to be engaged to accomplish novel manipulation of the line and the holder. In particular, the holder has end indentations around which the line is wrapped and also has a pair of angled notches on one side which are of minimum width relative to the diameter of the line so that when the line is forced thereinto it is anchored against longitudinal movement. The two notches lead from the outer edge at an angle directed toward respective adjacent ends of the holder. The other side edge of the holder has a pair of notches extending in at substantially right angles to said side edges which terminate in openings slightly larger than the line, thus allowing the line when fully inserted to move longitudinally therethrough.

3,817,472
APPARATUS OF WINDING A WATER-SKI ROPE
Koojiro Abe, 10 Besshocho, Matsubara-shi, Osaka-fu, Japan
Filed Sept. 25, 1972, Ser. No. 292,098
Claims priority, application Japan, Oct. 21, 1971, 46-97737
Int. Cl. F03g 1/08; B65h 79/00
U.S. Cl. 242—107 R 5 Claims



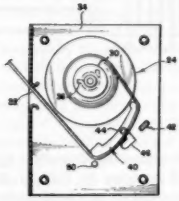
An improved apparatus for winding a water-ski rope on a reel in a short period of time by utilizing a winding device containing a spring which becomes wound up as the rope is progressively unwound from the reel. When the load is removed from the end of the rope, the spring returns to its original non-stress condition causing the rope to be wound up on the reel.

3,817,473
RETRACTABLE SAFETY BELTS
Richard G. Board, 3000 Conn Ave., Washington, D.C. 20008, and Nelson H. Shapiro, 640 Washington Bldg., Washington, D.C. 20005
Filed Nov. 5, 1964, Ser. No. 409,266
Int. Cl. A62b 35/00
U.S. Cl. 242—107.2 37 Claims



Retractable safety belt apparatus in which a strap is extended from a reel to a selected length and in which the apparatus is thereafter locked automatically to prevent further extension of the strap. Disclosed are: various mechanisms for controlling the operation of the extension-preventing device, including mechanisms driven by the reel and mechanisms responsive to strap tension; different types of strap clamps which open automatically during retraction of the strap and close automatically after desired extension of the strap; mechanisms which facilitate retraction of the strap; a mechanism which temporarily disables the extension-preventing device to permit the user to lengthen the belt after it has been fastened; and a belt fastener which ensures that the extended strap will always retract a bit after the belt is fastened.

3,817,474
RETRACTABLE SAFETY BELT
Richard G. Board, 3000 Connecticut Ave., Washington, D.C. 20008, and Nelson H. Shapiro, 640 Washington Bldg., Washington, D.C. 20005
Filed Apr. 1, 1965, Ser. No. 444,658
Int. Cl. A62b 35/00
U.S. Cl. 242—107.2 2 Claims



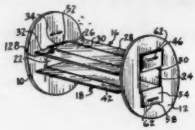
A seat belt retractor having an automatic clamp for preventing extension of seat belt employing a moving clamp part which also acts as a buffer to prevent the retraction reel from taking up increments of slack which occur while the belt is fastened due to abnormal movement.

3,817,475

COLLAPSIBLE REEL

Mark Goldstein, 405 Belmont Ave., Haddonfield, N.J. 08033

Filed June 9, 1972, Ser. No. 261,411
Int. Cl. B65h 75/22, 75/28
U.S. Cl. 242—115 9 Claims



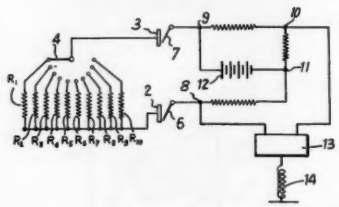
A collapsible light weight reel having good load-supporting properties comprising a pair of flanges and a core, the latter including two axially spaced parallel members each with a central panel, coextensive side panels pivotally secured thereto along axial fold lines and tabs pivotally secured to the ends of the central panel along transverse fold lines, the tabs extending through appropriate openings in the flanges and being secured thereto whereby the reel can be collapsed to a substantially flat inoperative position and erected to an operative position by a parallelogram action. The confronting side panels of the two core members are overlapped in the fully erect position and the abutment of the ends of these side panels against the inner faces of the flanges rigidifies the structure.

3,817,476

SELF-STEERING CARRIER FOR VARIOUS CONVEYOR SYSTEMS

Rene Jean Martin, Villeneuve-La-Garenne, France, assignor to Societe Francaise de Tubes Pneumatiques, Levallois-Perret, France

Filed Oct. 2, 1972, Ser. No. 293,945
Claims priority, application France, Oct. 1, 1971, 71.35462
Int. Cl. B65g 51/40
U.S. Cl. 243—16 R 4 Claims



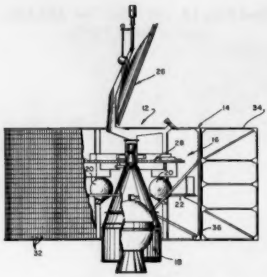
This carrier or container for conveyor systems, notably for pneumatic dispatch systems by tubular lines, comprises at least two conducting lateral strips, resistors inserted between one of said strips and the other strip through one or a plurality of said resistors, switch means for presetting or indexing the resistance value through said carrier, whereby, when said carrier travels past a suitable reading device comprising notably a Wheatstone bridge, the carrier can be switched to selectively follow any predetermined one among a plurality of routes. (FIG. 3)

3,817,477

DEPLOYABLE ANNULAR SOLAR ARRAY

Elmer M. Luther, El Segundo, and Setsuo A. Okumura, Manhattan Beach, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed July 6, 1971, Ser. No. 159,726
Int. Cl. B64g 1/10
U.S. Cl. 244—1 SS 18 Claims



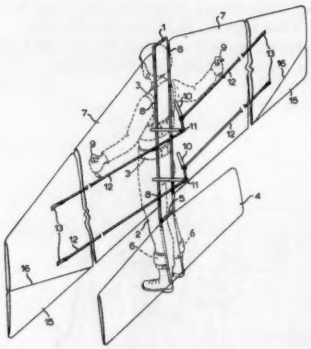
A deployable spacecraft solar array having an annular thin-film solar panel circumferentially surrounding a spacecraft body and supported on the body by hinged frames which are swingable inwardly to retracted positions against the body to contract the panel to a launch configuration with an effective diameter approximating the body diameter and outwardly to radial extended positions to expand the panel to a deployed configuration with a diameter substantially greater than the body diameter and hence a surface area substantially exceeding the body surface area.

3,817,478

VEHICLES FOR GLIDING FLIGHT

George McDonald, 718 Whitney Ave., Apt. 402, Hamilton, Ontario, Canada

Filed Jan. 11, 1973, Ser. No. 322,834
Int. Cl. B64c 31/02
U.S. Cl. 244—16 6 Claims



In an air vehicle intended for gliding there are provided two wing members and a tail member connected to a fuselage member and controllable respectively by the arms and legs of the pilot. The wing members are provided with spring arrangements constituted by respective cantilever arm members and an interconnecting tensile cord connected at its ends to the wing members and passing through swiveling eyelets at the ends of the arms. As the wing members are moved from a cen-

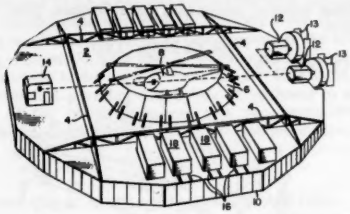
tral position in either the upstroke or the downstroke the cord tension increases from a minimum value that steadies the wing members in the neutral position and provides a restoring force assisting in producing smooth stroking of the wing members.

3,817,479

HELICOPTER POWERED AIR CUSHIONED PLATFORM

Walter A. Crowley, Rt. 1, Box 535L, Oak Harbor, Wash. 98277

Filed Oct. 2, 1972, Ser. No. 294,369
Int. Cl. B64c *27/00*
U.S. Cl. 244—17.11 5 Claims



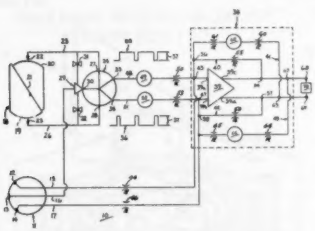
A helicopter powered air cushioned platform having a substantially planar upper surface for supporting cargo or the like. A standard commercial helicopter is secured centrally of the platform upon a supporting pad which may selectively be elevated or tilted to provide forward thrust. A segmented air intake duct is hingedly secured to the deck whereby the angle of each of the segments may be selectively controlled, thus accommodating helicopters of varying configuratins and further allowing rotor clearance when the helicopter supporting pad is tilted and thus provides forward thrust. The adjacent segments of the air intake duct are joined by an impervious flexible means whereby the duct is substantially airtight whether in the elevated or the collapsed position. The underside of the deck structure includes an extendible support member whereby the platform will be structurally stable when not supported by a cushion or air, as will be the case when loading or unloading the deck.

3,817,480

GAIN CHANGER FOR ANGLE-OF-ATTACK/ATTITUDE FLUIDIC FLIGHT CONTROL SYSTEM

Carl Gustave Ringwall, Scotia, N.Y., assignor to General Electric Company, New York, N.Y.

Filed May 30, 1972, Ser. No. 257,661
Int. Cl. B64c *13/40*
U.S. Cl. 244—78 9 Claims



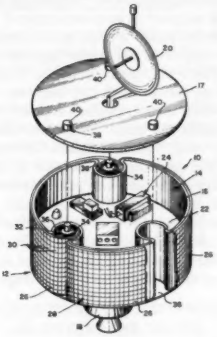
An angle-of-attack/attitude fluidic flight control system with gain changer means for compensating for output signal sensitivity to flight velocity variations including angle-of-attack sensor means for generating an output signal sensitive to the flight velocity and the angle-of-attack of a vehicle in flight, gyro means fluidically connected to the angle-of-attack sensor means for receiving a fluid pressure supply therefrom, the gyro means providing an output signal sensitive to the flight velocity and the attitude of the vehicle in flight, summer-integrator means having an input fluidically connected to the angle-of-attack sensor means and the gyro means for receiving the output signals therefrom, the output signals from the angle-of-attack sensor means and the gyro means being compared at the input of the summer-integrator means, and the summer-integrator means having an output connectable to actuator means for providing thereto correction signals for maintaining through operation of the actuator means the desired angle-of-attack and attitude of the vehicle in flight.

3,817,481

DEPLOYABLE SOLAR ARRAY FOR A SPIN STABILIZED SPACECRAFT

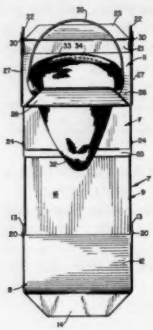
William I. Berks, Manhattan Beach, and Hans F. Meissinger, Los Angeles, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 17, 1971, Ser. No. 199,539
Int. Cl. B64g *1/10*
U.S. Cl. 244—1 SS 3 Claims



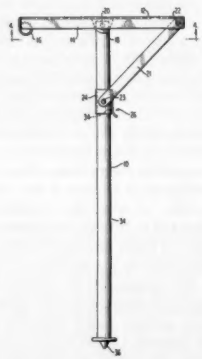
A deployable solar array for a spin stabilized spacecraft having a number of thin flexible solar panels spaced circumferentially about the spacecraft body, and deployment means secured to the panel ends for effecting centrifugal deployment of the panels from a launch configuration in which the panels are drawn firmly against the body so as to conform to the circumferential surface to a deployed configuration in which the panels are disposed outwardly from the body, at least between the panel ends, to provide a solar array having an effective area exceeding substantially the circumferential surface area of the body. In certain disclosed embodiments, the ends of the solar panels are wound on rotary drums from which the panels unwind during deployment in such a way that the deployed panels have lobe-like or wing-like configurations and the panels may be retracted to stowed configuration and deployed any number of times in flight. In other disclosed embodiments, the ends of the solar panels are attached to cables which are payed out from the spacecraft to deploy the panels. The panels of the latter embodiment may be joined end to end so as to deploy to an annular panel structure surrounding the body in outwardly spaced relation to the body. In one of these latter embodiments, the cables are attached to drums on the spacecraft body on which both the cables and panels may wind to permit both deployment and retraction of the panels in flight.

3,817,482
RACK FOR MAKING COFFEE
Alfonso P. Molina, 2801 N. Habana Ave., Tampa, Fla. 33607
Filed Sept. 7, 1972, Ser. No. 287,076
Int. Cl. B01d *23/28*
U.S. Cl. 248—94 5 Claims



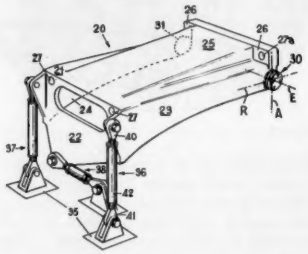
A coffee making rack having a top portion for supporting a cloth strainer containing ground coffee, and a bottom portion or base which is adapted to rest on a table or similar supporting surface and on which a cup, pot or other receptacle is adapted to be supported for receiving the coffee when hot water is poured into the open top of the strainer. The rack is formed of four pivotally connected sections, one end section of which constitutes the top portion and the other end section of which constitutes the base. The two intermediate sections, when extended, constitute a standard for supporting the top portion above and substantially parallel to the base. Lips or flanges on certain of the sections and which abut other of the sections limit the extent of pivotal movement of certain of the sections relative to one another in one direction to maintain the rack in an extended position. The rack sections are capable of being folded into a compact unit of approximately the size of any one of the rack sections for storage.

3,817,483
COMBINATION SPORT SEAT AND WALKING STICK
Francis J. Garvey, Conwell Ave., Newfield, N.J. 08344
Filed Oct. 2, 1972, Ser. No. 293,834
Int. Cl. A47c *13/00*
U.S. Cl. 248—155 2 Claims



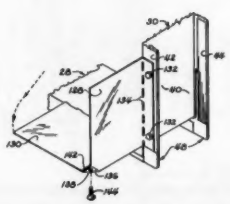
A combination sport seat and walking stick comprises a staff or leg member and a seat member hinged at its midpoint to one end of the staff, with strut means connecting an end of the seat to a sleeve that is slidable between fixed terminal positions on the staff for holding the seat alternatively in operative position normal to the staff or retracted in inoperative position along the staff and projecting from the named end of the staff in substantial alignment therewith for use of the device as a cane or walking stick.

3,817,484
DISPLAY UNIT MOUNTING MEANS
Anthony Charles Mundy, Cuxton, England, assignor to Elliott Brothers (London) Limited, Chelmsford, Essex, England
Filed May 18, 1972, Ser. No. 254,623
Claims priority, application Great Britain, June 4, 1971, 18929/71
Int. Cl. F16m *13/00*
U.S. Cl. 248—278 4 Claims



A mounting means, for a display unit, in which fixing means for securing the mounting means to an associated assembly comprises a bearing which serves to constrain the mounting means to rotational movement about a centre fixed with respect to the associated assembly, and a plurality of links of adjustable length each attached at one end to the mounting means at a point remote from the bearing, and each fixed at the other end to the associated assembly to lie transversely to the bearing so that adjustment of the lengths of the links adjusts the angular position of the mounting means, and hence the display unit, about said centre of rotation.

3,817,485
CONTROL DAMPER CONSTRUCTION
James R. Root, Independence, Mo., assignor to Ruskin Manufacturing Company, Grandview, Mo.
Division of Ser. No. 86,697, Nov. 4, 1970, Pat. No. 3,718,081.
This application Dec. 7, 1972, Ser. No. 313,195
Int. Cl. F16m *11/04*
U.S. Cl. 248—300 2 Claims



A foldable motor mount adapted to be secured to a supporting framework is provided. First and second initially flat planar members are disposed parallel to the longitudinal plane of the framework. Each planar member has a line of weakness presented by a plurality of voids disposed in linear alignment and interrupted by a plurality of integral strength-inducing

portions of the member. Each member is bendable along its line of weakness to present complemental interengageable bracket sections when they are moved into perpendicular relationship to the frame. Each member is provided with a tab which extends outwardly to engage the corresponding tab on the other member. The two tabs are secured together by appropriate coupling means to complete the motor mount. The frame is provided with heavy, relatively rigid corner braces which provide added strength to the frame structure. The frame sections are rigidly secured to the braces by deforming a portion of the relative malleable frame section material into appropriate cavities in the corner braces.

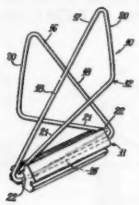
Directional control of the damper vane is achieved through a reversible link which is coupled with an arm rigid with one of the axle members and also with an actuating lever. A motor mounting bracket for supporting a prime mover for the actuating lever is provided by a pair of planar members, each of which is secured to the damper frame in a flat disposition and each of which is provided with a line of weakness to allow bending of the planar members into two perpendicular bracket sections which have interengaging tab projections.

3,817,486

UNIVERSAL NOTE AND MESSAGE HOLDER

Jon L. Liljequist, 801 S. Elmhurst Ave., Mount Prospect, Ill. 60056

Filed Nov. 24, 1972, Ser. No. 309,228
Int. Cl. A47g *1/17*
U.S. Cl. 248—467 **8 Claims**



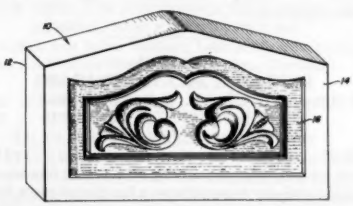
A holder for notes, messages, business cards, envelopes or the like which makes use of a wire-form paper clip of preferably standard shape mounted in a base. In several forms, this base pivotally carries the paper clip and is so designed as to permit the paper clip to be rotated relative thereto and fixed therein in any one of a number of angular positions.

3,817,487

CAST MOLD OF CU—SN—NI ALLOY

John Y. Riedel, Bethlehem, Pa., assignor to James H. Bateman, Bethlehem, Pa.

Filed Jan. 8, 1973, Ser. No. 321,927
Int. Cl. B29c *1/02*
U.S. Cl. 249—135 **9 Claims**



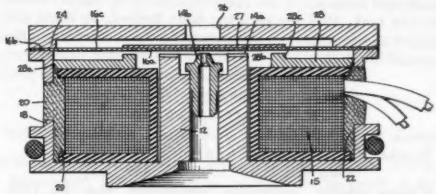
This disclosure covers a copper base alloy mold suitable for making plastic parts. More particularly, it relates to a mold cast from an alloy consisting essentially of, by weight percent, about 6.0 to 20.0 percent tin, about 8.0 to 12.0 percent nickel, preferably no more than about 10.0 percent nickel, and the balance copper. In the as-cast condition, the mold is characterized by a hardness between about BHN 145 and 275, and a molding surface which faithfully reproduces the surface detail of the original part or pattern.

3,817,488

ELECTRO-PNEUMATIC DEVICE

Richard B. Mack, Woodbridge, Conn., assignor to Northeast Fluidics, Inc., Bethany, Conn.

Continuation-in-part of Ser. No. 186,247, Oct. 4, 1971, abandoned. This application Feb. 22, 1973, Ser. No. 334,845
Int. Cl. F16k *31/02, 31/40*
U.S. Cl. 251—30 **11 Claims**



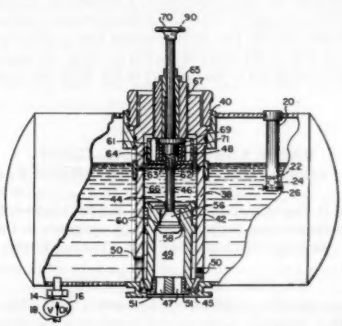
An air valve or other control device actuated by control of escaping air has a magnetizable shell forming a core, a bottom wall and a cylindrical side wall; the core having a passage for the escaping air, terminating with a nozzle and being surrounded by a solenoid. A metal armature disk of great flexibility has a peripheral portion rigidly engaging the end of the shell wall and a portion which is attracted to the core to close the nozzle when the solenoid is energized. Optionally, a nonmagnetic diaphragm covers the armature and is enclosed by a chamber having an inlet for signal air under light pressure such as used by fluidic circuitry. Therefore, the device may be actuated by either a fluidic or electrical signal.

3,817,489

HYDRAULIC FLUSH TANK WITH IMPROVED SEATING AND RESEALING MEANS

Roger P. Caron, North Andover, and Thomas P. Howard, Ashland, both of Mass., assignors to Water Control Products, Inc., Birmingham, Mich.

Filed Aug. 17, 1972, Ser. No. 281,349
Int. Cl. F16k *31/38;* **E03d** *3/02;* **F16k** *21/18*
U.S. Cl. 251—38 **8 Claims**



A valve, plug and pressure responsive diaphragm combination for use in a flushing device of the type which includes a closed container for receiving and retaining a quantity of pressurized water. The plug is capable of being seated within the

outlet of the tank and has an aperture therein into which the valve is slidably received. The valve is attached to a stem which in turn is affixed to the diaphragm. The valve is pushed downward from a seated position in the plug against the action of the diaphragm when the tank is flushed. This downward movement of the valve opens the aperture in the plug in which the valve was seated which decreases the pressure within the cylinder above the plug and causes the plug to move upwardly from its seated position in the tank outlet thus opening the outlet for the passage of water from the tank during the flushing cycle. As the tank empties, the plug, diaphragm and valve drop. The plug cannot move to a position lower than the seated position. However, when pressure in the tank is low, the valve can move in a downward direction from the seated position. Because the valve is free to move in a downward direction when the plug is seated, liquid can flow through the aperture in the plug to reseal a bowl after the tank has been flushed and the plug has been seated. To reseal the tank, the diaphragm responds to the pressure created by liquid coming into the tank, after the tank has been flushed, by rising and thereby slowly raises the valve until the valve is seated in the aperture in the plug.

3,817,490

GAS-TIGHT VALVE LID

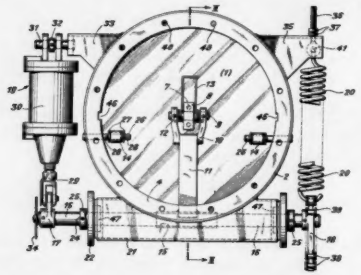
Helmut Deeg, Sulz/Attikon, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed Mar. 8, 1973, Ser. No. 339,128

Claims priority, application Switzerland, Mar. 14, 1972, 3685/72

Int. Cl. F16k *31/143*

U.S. Cl. 251—58 **10 Claims**



The lid is moved between a closed position against a flange of the casing and a substantially horizontal open position by means of a lever mounted in the casing. The lever is caused to move towards the open position by a pneumatic or hydraulic means and is caused to move towards the closed position by a spring-biased means. The lid is mounted with a clearance relative to the end of the lever to permit pivoting. Abutment rollers in the casing aid in the support of the lid in the open position.

3,817,491

RAPIDLY SHIFTING, LEAK-PROOF ELECTROMAGNETICALLY ACTUATED DISCHARGE VALVE

Manfred H. Burckhardt, Waiblingen, and Paul Schwerdt, Esslingen-Hegensberg, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

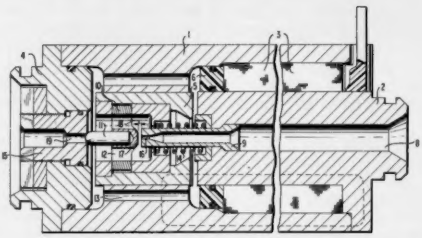
Filed May 12, 1972, Ser. No. 252,586

Claims priority, application Germany, May 14, 1971, 2124025

Int. Cl. F16k *31/06*

U.S. Cl. 251—141 **20 Claims**

A rapidly shifting leak-proof, electromagnetically actuated valve for liquids or gases, especially for brake slippage control systems in motor vehicles, with a direct hydraulic control of the medium to be controlled as well as a piston armature forming or carrying the valve body closure member; the medium thereby flows into the valve substantially centrally, circumcirculates the valve body which is arranged substantially centrally and flows off through a central valve seat, whereby the closing time of the valve is improved by a surface provided on the piston armature which is adapted to be acted upon by the flow energy of the in-flowing medium.



3,817,492

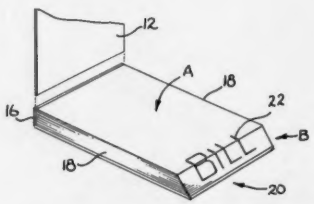
MESSAGE EDGED PAD

Paul Raymer, 13012 Vanowen St., North Hollywood, Calif. 91605

Filed July 10, 1972, Ser. No. 270,099

Int. Cl. B42d *15/00*

U.S. Cl. 283—63 R **4 Claims**



A pad of paper bound at one edge for facile removal of one or more sheets of paper, including an indicium display area with indicium included therein, such area being defined by the collective unbound edges of a side or end of such pad whereby said indicium remains visible when viewed either from the top or indicium display area edge of such pad notwithstanding the removal of some or all but one of the sheets of paper in such pad. The method of manufacturing such paper pad including the steps of stacking a plurality of paper sheets for cutting, each of such sheets bearing an identical indicium identically placed thereon; cutting such sheets to render such message visible from the top and end of such stack; and, re-stacking such sheets for binding into a pad at an edge thereof removed from such indicium.

3,817,493

HYDRAULIC JACK FOR TRAILERS

Paul E. Hanser, 2329 33rd St., Moline, Ill. 61265

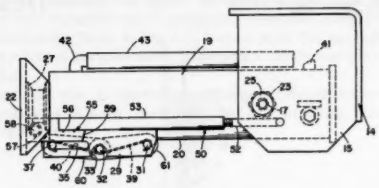
Filed July 21, 1972, Ser. No. 273,929

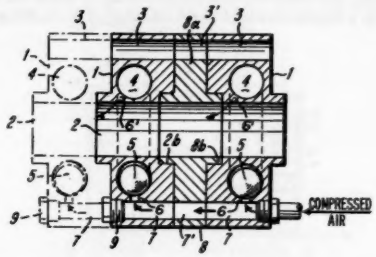
Int. Cl. B66f *7/26*

U.S. Cl. 254—86 R **12 Claims**

A jack for supporting a standing vehicle that is composed of a hydraulic cylinder swingable on a horizontal pivot between an up and retracted position and a vertical down position. Positioned alongside the cylinder is a link mounted on a horizontal pivot offset fore-and-aft and beneath the pivot car-

rying the cylinder. The lower end of the link carries a lock that engages the ram when it is retracted and engages and locks the cylinder when it moves to its vertical position. Due to the lock movement upon the vibrator housing means which latter is by a connecting member connectable to the form for the concrete or the like, the vibrator housing means being so





and the relative position of the pivots, the cylinder is forced to swing downwardly as it starts its extension stroke and is locked in vertical position after initial extension of the ram.

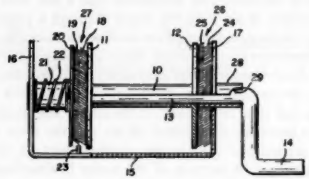
designed that it can be connected end face to end face with other similar housing means coaxially with regard to the axis about which the eccentric mass circulates.

3,817,494

DRUM DRIVE

George H. Eckerdt, Rochester, N.Y., assignor to Korton Sciences Incorporated, Rochester, N.Y.

Filed Feb. 22, 1973, Ser. No. 334,669
Int. Cl. B66d *1/20*
U.S. Cl. 254—187 12 Claims



A windlass drum drive uses a drum axially and rotatably movable on an axially movable shaft with two-part, rotationally oriented fiber units arranged on each end of a drum. A fiber drive unit engages between the shaft and the drum for winding in the windlass, and a fiber brake unit engages between the drum and a fixed surface for braking the drum in any stopped position. Axial movement of the shaft releases both fiber units to let the windlass pay out, and a spring biases the shaft toward engaging both fiber units for winding in and braking.

3,817,495

OUTER VIBRATOR FOR CONNECTION TO MOLDS, JARRING TABLES, AND THE LIKE

Philipp Uebel, and Julius Paukert, both of Munich, Germany, assignors to Wacker-Werke KG, Munchen, Germany

Filed Apr. 10, 1972, Ser. No. 242,714
Claims priority, application Germany, Apr. 8, 1971, 2117307
Int. Cl. B06b *1/18*; B01f *11/00*; B28b *1/08*
U.S. Cl. 259—1 R 7 Claims

An outer vibrator, especially for connection to forms for concrete, jarring tables, or the like, in which an eccentric mass substantially tangentially acted upon by air under pressure rolls on a continuously curved track closed in itself on the inside of the housing means of the vibrator to impart a vibration

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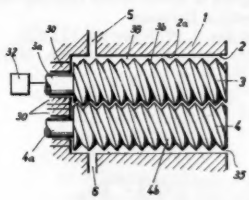
3,817,496

MIXING AND CONVEYING APPARATUS

Egon Kratochvil, Modling, and Wladimir Hascic, Maria Enzersdorf, both of Austria, assignors to Semperit A G, Vienna, Austria

Filed Dec. 22, 1971, Ser. No. 210,692
Claims priority, application Austria, Dec. 23, 1970, 11580
Int. Cl. B01f *7/08*
U.S. Cl. 259—6 7 Claims



A mixing and conveying apparatus, especially for dual or more component synthetic resin systems wherein the apparatus comprises a housing rotatably supporting at least two threaded spindles or worms, the threading of which meshes with one another. The housing is provided with inflow and outflow channels for the processed material. According to important aspects of the invention the threaded worms are rotated in the same direction, a uniform play or gap is present between the spindles and the wall of the mixing compartment of the housing, and the lengthwise axes of the worms are disposed in a common or single plane.

3,817,497

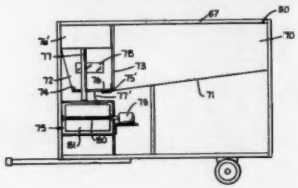
MORTAR MIXING SYSTEM

Robert S. Waltman, 1817 N. Rural, Indianapolis, Ind. 46218

Filed Sept. 7, 1972, Ser. No. 287,070
Int. Cl. B28c *5/14*, *5/42*, *7/04*
U.S. Cl. 259—154 1 Claim

A system for producing dry mortar mix and at a remote location, transporting the dry mix to the construction site and then mixing the dry mix with water producing the mortar. The system includes a building having three separate compartments for patent mortar, additive and sand. An endless conveyor belt conveys sand from a sand dump to the sand compartment with the conveyor belt extending through a heat insulated tunnel with electrical coils positioned adjacent the

length of the conveyor belt for heating the sand and reducing the moisture content in the sand. The three compartments exit into a drum pivotally mounted to the building which has a rotatably driven paddle for mixing the patent mortar, additive and sand. The drum is pivoted downwardly to dump the dry mix into a hopper mounted to the side wall of the building. A



rotatably driven auger conveys the dry mix from the hopper upwardly into a chute which opens into a dry mix compartment of a vehicle therebeneath for transportation to the job site where dry mortar is augered into a job trailer. The trailer has a water storage tank and a dry mix compartment allowing the mortar to be prepared as needed in smaller quantities.

3,817,498

EXTRUSION PRESS FOR PROCESSING VISCOUS MATERIALS, ESPECIALLY CLAY OR CLAY-LIKE MATERIALS

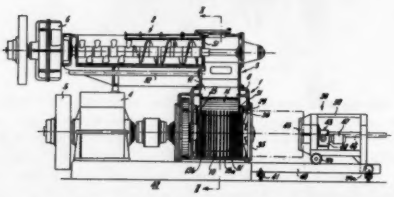
Gunther Frankfurth, Konstanz, Germany; Werner Wieser, Kreuzlingen, Switzerland, and Rainer Handle, Konstanz, Germany, assignors to Rieter-Werke Dipl-Ing. Walter Handle GmbH, Konstanz, Germany

Filed Jan. 8, 1973, Ser. No. 322,025

Claims priority, application Switzerland, May 3, 1972, 6545/72

Int. Cl. B01f *7/08*

U.S. Cl. 259—192 **37 Claims**



An extruder for processing viscous materials, especially suitable for the processing of clay or clay-like materials, comprising a housing having an inlet opening and an outlet opening, at least one revolving conveyor element arranged in said housing. The conveyor element is provided at its periphery with a number of projections which are distributed over its length, said projections traveling in the peripheral direction and having the same height, and said projections extending almost up to the inner wall of the housing along at least a part of their peripheral movement. A scraper element is arranged at the outlet opening for engaging into the intermediate spaces between the projections and said projections having a greater spacing from one another at the central region of the conveyor element than at the outer regions thereof. There can also be provided a further revolving conveyor element cooperating with the first revolving conveyor element, said further revolving conveyor element likewise being provided at its peripheral surface with projections of the same height and which travel in the peripheral direction.

3,817,499

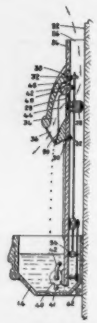
WALL SUSPENDED HUMIDIFIER

Roger J. Lerou, 73 Pynford Crescent, Don Mills, Ontario, Canada

Filed Feb. 26, 1973, Ser. No. 335,644

Int. Cl. F26f *3/14*

U.S. Cl. 261—29 **12 Claims**



A wall suspended humidifier which is light in weight, relatively inexpensive to manufacture, and which has a visible flow of water therein which combines with the appearance of the body and bowl to provide a pleasing visual and audio effect. Previous floor mounted room humidifiers have been generally unattractive in appearance and have not provided optimum circulation of air in the room. The present humidifier has a body with a decorative panel secured to the upper part thereof and a water reservoir removably secured to the lower portion thereof. The humidifier has a fan which maintains circulation of air from the room through a passage provided in the body and through an air flow duct in the decorative panel back out into the room again. A pump is provided to maintain a flow of water from the reservoir up into the air flow duct in the decorative panel, from where it falls back into the reservoir in full view of a person in the room. The humidifier is designed to have the circulation of air and the flow of water cross at a screen provided in the air flow duct on which the water is dispersed. A portion of the water is absorbed by the air and carried out into the room, thereby increasing the humidity in the room. The air flow duct is sloped or curved so that the operating parts are not noticeably visible to a person in the room, and the appearance of the decorative panel and the reservoir is compatible with the visible flow of water therebetween.

3,817,500

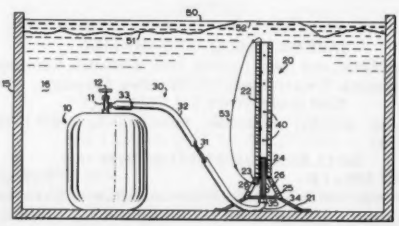
APPARATUS FOR RETARDING FREEZING OF A FLUID

Paul W. Cooper, Albuquerque, N. Mex., assignor to Frank J. Castiglia, Colorado City, Colo.

Filed Jan. 4, 1972, Ser. No. 215,368

Int. Cl. B01f *3/04*

U.S. Cl. 261—77 **8 Claims**



Apparatus for retarding freezing of a liquid including a tank of pressurized gas and a gas conducting line leading to a point

beneath the surface of the liquid to generate and release bubbles into the liquid to create fluid circulation therein to retard freezing. The gas conducting line may include elongated, twisted wires coated with a tight-fitting gas sealing coat, the resistance to through-flowing gas presented thereby effecting a metering of the gas to release it at a predetermined rate below the surface of the liquid. Additionally, an escape chimney is also included which presents a vertically oriented gas conduit having holes at top and bottom with the gas bubbles being released therebetween to stimulate additional fluid circulation.

Disclosed also is apparatus defining a critical orifice for presenting a known resistance to gas or fluid flowing therethrough.

3,817,501

LOWER TRAY OF A COLUMN APPARATUS USED FOR CONTACTING LIQUID AND GASEOUS MEDIA

Anatoly Borisovich Tjutjunnikov, ulitsa Feunze, 17, kv. 34; Vitaly Ivanovich Shporkhun, ulitsa Kuibysheva, 11, kv. 6; Alexandr Nikolaevich Marchenko, pereuluck Kolidezny, 47, kv. 2; Galina Panteleimonovna Pochinok, ulitsa Cornaya, 32, kv. 2, and Erik Mikhailovich Krivorotchenko, ulitsa Bondaren Kovaskaya, 14/16, kv. 9, all of Kharkov, U.S.S.R.

Continuation of Ser. No. 866,292, Oct. 14, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 247,004

Int. Cl. B01f *3/04*

U.S. Cl. 261—79 A **8 Claims**

A louvered tray of a column apparatus used for providing contact between liquid and gaseous media on the surface of the tray in the course of a uniflow motion of the media, comprising a plurality of louvers and vertical partitions secured in between said louvers on the tray surface and used to direct the liquid to the louvers. Each louver is composed of a plurality of turnable plates which normally rest upon one another but which are raised by the gas when it passes therethrough. The tray provides a uniform distribution of liquid and gas along the surface of the tray and good dispersion of the liquid to insure a great area of contact between the liquid and gas.

3,817,502

APPARATUS AND METHOD FOR REFINING MOLTEN IRON

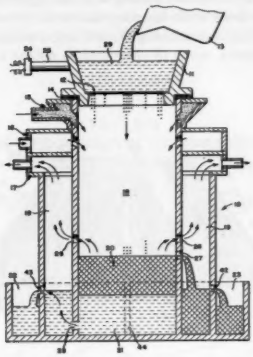
Richard P. Taylor, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Sept. 21, 1972, Ser. No. 290,956

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 R **6 Claims**

There is disclosed a spray steel making process wherein streams of molten pig iron are subjected to a constant frequency vibration. This vibration causes the streams to break up into uniformly sized and regularly spaced drops which then are refined in the presence of oxygen and a shower of lime particles. A fast and yet precisely controlled refining reaction is produced because of the small but uniform drops which fall through the reaction chamber. Apparatus is also disclosed for automatic adjustment of the stimulation frequency and for electrical charging of the drops so formed.



3,817,503

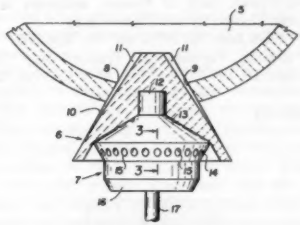
APPARATUS FOR MAKING METAL POWDER

James H. Lafferty; Raymond A. Reiter, and Paul J. Gibilisco, all of Reading, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

Filed June 13, 1973, Ser. No. 369,553

Int. Cl. C21c *7/00*

U.S. Cl. 266—34 R **11 Claims**



Apparatus for atomizing molten metal in which the upper portion of a ceramic nozzle distribution element coacts with the bottom of a source of molten metal such as a tundish to form a hollow stream of molten metal An array of fluid nozzles is located within the hollow stream, and the radially outwardly directed fluid jets atomize the falling curtain of molten metal into particulates which are driven outwardly and away from each other by the impinging fluid. The ceramic distribution element is preferably formed with channels which become progressively shallower downwardly toward the bottom of the ceramic element.

3,817,504

CONVERTER HOOD

Rudolf Vonnemann, Dortmund-Wellinghofen, Germany, assignor to Hoesch Werke Aktiengesellschaft, Dortmund, Germany

Filed Jan. 29, 1973, Ser. No. 327,825

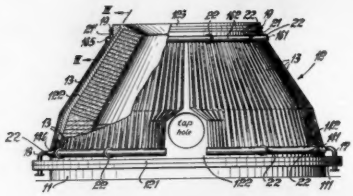
Claims priority, application Germany, Jan. 29, 1972, 2204199; Aug. 26, 1972, 2242123

Int. Cl. C21c *5/42*

U.S. Cl. 266—35 **8 Claims**

A converter hood having an upper set and a lower set of circularly located and alternately arranged distributing and col-

lecting conduit sections which are connected to the outside of said converter hood and together with conduit means extending between and communicating with the upper and lower sets of conduit sections while forming therewith a cooling fluid circuit, the conduit means being divided into a plurality of groups of conduit means, some of the conduit means of each group



leading upwardly from a section of the lower set to a section circularly offset thereto and pertaining to the upper set, and some of the conduit means of the respective same group of conduit means leading from the last mentioned section of the upper set to a section offset to the last mentioned section and pertaining to the lower set.

3,817,505

DEVICE FOR INJECTING FLUIDS IN TUYERES WITH SEPARATE MULTIPLE FEEDS

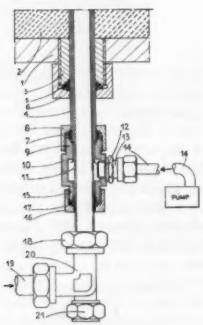
Pierre LeRoy, Saint-Germain-en-Laye, and Emile Sprunck, Moyeuvre-Grand, both of France, assignors to Creusot-Loire, Paris, France, by said Pierre Leroy

Filed June 26, 1972, Ser. No. 266,256

Claims priority, application France, July 29, 1971, 71.27760; Oct. 18, 1971, 71.37308; May 2, 1972, 72.15476

Int. Cl. C21c 5/48

U.S. Cl. 266—41 6 Claims



At least two pressurized fluids are fed to a converter through tuyeres having at least two concentrically spaced pipes. Each pipe is longer on the feed side than the pipe which surrounds it. Annular seals on the pipes form a fluid supply chamber. The outermost pipe is surrounded by a sleeve and has two annular seals on its outer surface to resist leaks from the nose of the tuyere and to prevent leaks of fluid supplied to the outer pipe.

3,817,506

APPARATUS INVOLVING THE HYDROSTATIC COMPRESSION OF AN ELASTOMER

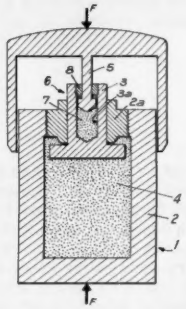
Jean M. Jarret, Fourqueux, and Jacques H. Jarret, Chatou, both of France, assignors to Societe d'Exploitation des Ressorts Auto Amortisseurs, Paris, France

Filed Aug. 8, 1973, Ser. No. 386,490

Claims priority, application France, Aug. 23, 1972, 72.30088

Int. Cl. B60g 11/22; F16f 3/08

U.S. Cl. 267—63 R 1 Claim



The invention is concerned with apparatus involving the hydrostatic compression of an elastomer. The apparatus has a first mass of precompressed elastomer in a first enclosure in which a first piston is slidably mounted. The first piston defines a second enclosure for a second mass of precompressed elastomer in which a second piston is slidably mounted. The second mass of elastomer is under a considerably higher pressure than the first mass of elastomer. Apparatus in accordance with the invention can be used in railway couplings.

3,817,507

TENSION SPRING DEVICE

Karl Gustav Einar Derman, Sorgardsvagen 7, S-433 00 Partille, and Nils-Erik Bohman, Sveavagen 8 A, S-331 00 Varnamo, both of Sweden

Filed Sept. 29, 1972, Ser. No. 293,365

Claims priority, application Sweden, Sept. 30, 1971, 12358/71; Dec. 19, 1971, 15843/71; Apr. 7, 1972, 4483/72

Int. Cl. F16f 1/46

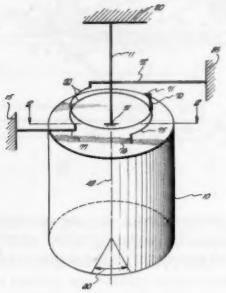
U.S. Cl. 267—74 12 Claims

A tension spring device which can be used for mooring boats and towing cars comprises a flexible draw element, for example, a rope, and a spring element of an elastic material, for example, rubber. Between its ends the draw element is connected with the spring element at at least two points and between these two points the draw element extends in a path deviating from a straight line, for example, a helix path, the draw element engaging the elastic material of the spring element at least in the tensioned state of the spring device.

3,817,508
CIRCULAR CONNECTION BANDS FOR A SUSPENDED BODY

Darryl K. Bergstrom, Pacific Palisades, and David C. Clark, Los Angeles, both of Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Jan. 26, 1972, Ser. No. 220,962
Int. Cl. F16f *1/10*
U.S. Cl. 267—160 **9 Claims**

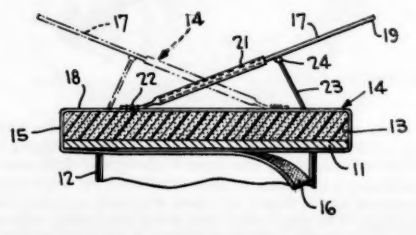


A connection band configuration having a minimum spring constant for a suspended body capable of rotating back and forth is disclosed. The connection band configuration comprises at least a pair of circular bands which are positioned in a horizontal plane transverse to the vertical plane which contains an axis of rotation about which the suspended body rotates. At least one pair of connection bands are employed with both bands of the pair having their centers substantially coaxial with the vertical rotational axis. One end of one band of the pair is mounted at a predetermined point on the suspended body and the other end of that band is mounted at a second point which is fixed relative to a rotational movement of the body. The other band and its mountings are a mirror image of the first band. The mountings are arranged in such a manner that when the suspended body is at its rest position, both bands of the pair are in an initial circular configuration. As the body rotates about the vertical axis, each band of the pair moves in opposition to the movement of the other band. The movement of each band takes the form of expanded and contracted circular arcs, respectively.

3,817,509
PATIENT POSITIONER DEVICE

Thomas R. Komline, Peapack, N.J. 07977

Filed Sept. 29, 1972, Ser. No. 293,570
Int. Cl. A61g *13/00*
U.S. Cl. 269—322 **3 Claims**

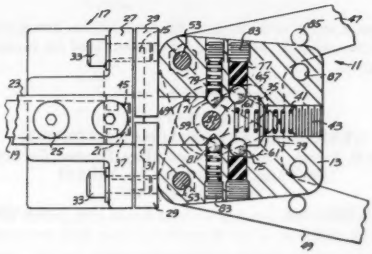


A device for raising a patient resting on a tabletop from a flat position to a desired angular position for aiding in photographic and examination procedures. The device, located beneath the patient, includes a flexible belt secured about the table and a lever pivotally attached to the belt at one end. A lever support means maintains the lever pivoted upwardly and the patient angularly positioned as desired.

3,817,510
CAM WEDGE SWIVEL GRIPPER HEAD

Joseph M. Jatcko, 15555 E. Twelve Mile Rd., Bloomfield Hills, Mich. 48066

Filed Jan. 10, 1973, Ser. No. 322,438
Int. Cl. B25b *1/18*; **F16j** *1/00*
U.S. Cl. 269—34 **4 Claims**



A cam wedge work piece gripper head has a body receiving a power reciprocated plunger and pivotally mounted on the body opposed pairs of normally spaced apart work piece gripping arms. Opposed rollers carried by said plunger nest within angularly related cam slots in the respective pairs of arms so that forward and retracting movements of said plunger effect corresponding closing and opening movements of said pair of arms. A spring resists initial longitudinal forward movement of said plunger. Resilient detents are mounted within the gripper head body and are normally biased against said plunger yieldably resisting initial forward movement thereof and adapted on such forward movement to retainingly engage said plunger against retraction.

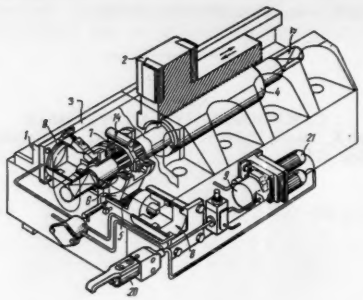
3,817,511
DEVICE FOR RIGGING THE POSITION OF AND GRIPPING A WORKPIECE RELATIVE TO THE MACHINE

Valery Grigorievich Abaimov, Zvezdny bulvar, 20, kv. 7, Moscow; Alexei Savelievich Kochinev, Novomytischinsky prospekt, 23/7, kv. 87, Novye Mytischi Moskovskoi oblasti; Sergei Nikolaevich Kiselev, ulitsa Kosmonavtov, 16, kv. 34, Moscow; Vladimir Mifodievich Nikiforov, ulitsa Kosmonavtov, 16, kv. 34, Moscow, and Georgy Mesropovich Parsegov, Leninsky prospekt, 82/2, kv. 187, Moscow, all of U.S.S.R.

Filed Mar. 22, 1972, Ser. No. 237,191
Int. Cl. B25b *1/10*
U.S. Cl. 269—227 **2 Claims**

A clutch device ensuring the connection of a screw with the shaft of a gear wheel of a rack-and-gear transmission which is made reversible and has asymmetrically chamfered teeth providing for rotation of its semiclutches which transmit rotation directly to the motion screw in mutually opposite directions, as well as a sliding-through of the semiclutches during the turns of the gear wheel that are reversible relative to

the direction of rotation of the semiclutches. The mechanism used for reversing the clutch is provided with a resilient ar-



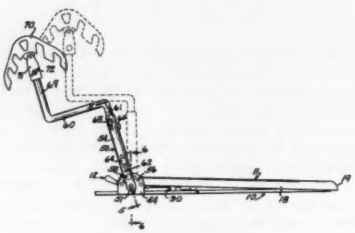
rangement ensuring pressing of the semiclutches brought into interaction with the aid of the mechanism used for reversing the clutch.

3,817,512

GENITO-URINARY EXAMINATION DEVICE

Robert R. Torrey, 270 Meadowood Ridge, Decatur, Ga. 30034

Filed Aug. 31, 1972, Ser. No. 285,533
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 **6 Claims**



A portable genito-urinary examination device for use in conjunction with a bed or other support to orient the pelvic area of a patient including a support base which rests on the bed, a table pivoted to one end of the support base and overlying the base, an elevating mechanism for selectively raising the opposite end of the table with respect to the base, and a pair of leg supports carried by the base on opposite sides of that end of the table which can be raised. Adjustment means is provided for varying the lateral spacing between the leg supports, the pivotal position of the leg supports and the height of the leg supports.

3,817,513

WINDING MECHANISM FOR CLOTH SPREADING MACHINE

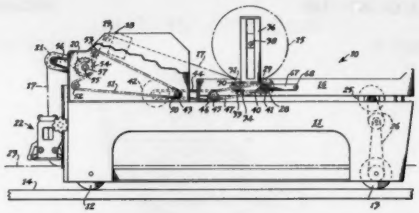
Cecil S. Frederick, Murfreesboro, Tenn., assignor to Cutters Machine Company, Inc., Nashville, Tenn.

Filed May 16, 1972, Ser. No. 253,794
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 **7 Claims**

A cloth spreading machine including a support for rotatably supporting a cloth supply roll, a reversible drive means for driving the supply roll in either a forward feeding direction or a reverse winding direction.

The invention is also characterized by a top feed roll, means for driving the top feed roll only in the forward or feeding direction, so that the top feed roll is inoperative in the reverse or winding direction of the cloth supply roll.

The invention is further characterized by a clutch mechanism including a unidirectional forward or feeding



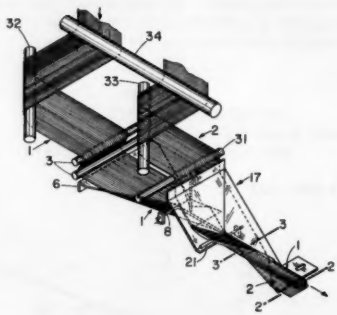
clutch and a unidirectional reverse or winding clutch and means for selectively rendering either clutch operative for driving the cloth supply roll in the respective feeding or winding directions.

3,817,514

METHOD OF PRODUCING INTERFOLDED WEBS OF FLEXIBLE SHEET MATERIAL

Walter D. Nissen, Appleton, and Philip G. Hammond, Neehah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 42,348, June 1, 1970, Pat. No. 3,679,095.
This application Jan. 31, 1972, Ser. No. 222,402
Int. Cl. B31l *1/30*
U.S. Cl. 270—40 **2 Claims**

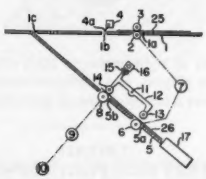


Tissue webs which may be of substantially indefinite length and suitable for cutting to a convenient size for packaging are folded and interfolded. The upper or starter web of the stack is folded in quarters and so arranged that this upper web is readily grasped by the fingers of a hand and easily removed from the stack. The next lower web being interfolded with the upper is partially withdrawn from the stack so that is is presented for easy removal also. Several apparatus arrangements and methods for effecting the folding are described.

3,817,515
DEVICE FOR CORRECTING THE MISALIGNMENT OF THE ORIGINAL COPY AND COPYING PAPER OF A DUPLICATOR

Satoshi Kanda, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan. The portion of the term of the patent subsequent to May 18, 1990 has been disclaimed.

Filed Jan. 30, 1970, Ser. No. 7,199
Claims priority, application Japan, Feb. 1, 1969, 44-7477
Int. Cl. B65h *5/06*
U.S. Cl. 271—9 **2 Claims**

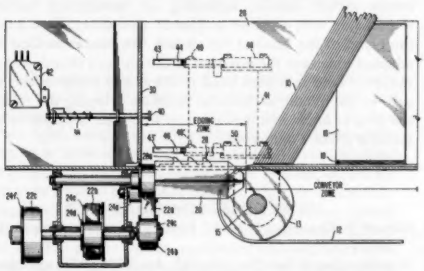


A feed system for a duplicator for the feeding of original and copying paper. A DC motor is provided for feeding the original and detecting means are provided for detecting the passage of the leading and trailing edges of the original past a given point. A feeding roller for the copying paper is also coupled to the DC motor. A pivoted member has a roller on one end opposed to the feed roller, and a roller on the other end opposed to a compensating roller for adjusting the position of a copying paper. The pivoted member is actuated by detection of the leading edge of the original past the point to move in a direction to effect the feeding of the copying paper by the feed roller. Upon detection of the trailing edge of the original, the pivoted member is moved to enable adjustment of position of a copying paper by the compensating roller. The compensating roller is driven by a DC balancing motor, the balancing motor being driven by a voltage corresponding to the difference between the armature voltage of the DC drive motor and the voltage at a tap of a potentiometer. The position of the tap is controlled by the balancing motor, so that the balancing motor only operates when the voltage at the tap is different than the voltage at the armature of the DC drive motor.

3,817,516
DOCUMENT EDGING AND STACK ADVANCE SYSTEM

S. James Lazzarotti, Broomall; Edward A. Wojtowicz, Bryn Mawr, and James R. Hunter, Chadds Ford, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 31, 1973, Ser. No. 365,475
Int. Cl. B65h *1/02, 1/14, 9/00*
U.S. Cl. 271—150 **10 Claims**

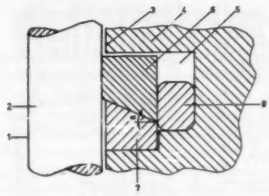


The present disclosure describes an edging and stack advance system that is capable of automatically preparing documents such as letters and the like, that have been loaded onto a conveyor for subsequent feeding, sorting and/or processing. Significant features of the system include the use of separate zones for conveyance and edging, and a plurality of interconnected stack sensing switches. The latter switches cooperate to establish and maintain a stack geometry having a degree of looseness which permits reliable edging and subsequent feeding of the documents. The entire system has been designed to be relatively uncomplicated and may be manufactured at low cost.

3,817,517
DEVICE FOR ESTABLISHING A SEAL BETWEEN CYLINDRICAL SURFACES

Ulf Rolfsson Lundqvist, Mjolby, Sweden, assignor to Forenade Fabriksverken, Mjolby, Sweden

Filed Mar. 15, 1973, Ser. No. 341,377
Int. Cl. F16j *9/00, 15/32*
U.S. Cl. 277—165 **5 Claims**

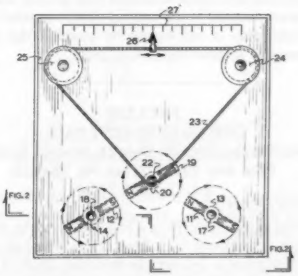


A sealing ring about a cylindrical rod moving in a cylinder separates high and low pressure areas on either side of the seal. The seal rides in an annular groove in the cylinder and has a first conically shaped steel ring with a gap between its surface and the rod with its longer surface toward the rod. A second polymeric plastic mating conically shaped ring has its shorter surface in contact with the rod surface. The back surfaces of the two rings are spaced from the back of the angular groove by a rubber ring. The angular groove has a gap on the high pressure side which permits the medium under pressure to force the two conical surfaces together urging the polymeric ring into the rod on the one hand and compressing the rubber ring to urge both the steel and plastic rings toward the rod on the other hand.

3,817,518
MAGNETIC AMUSEMENT DEVICE

Willis G. Routson, 1075 Walnut Ave., Walnut Creek, Calif. 94598

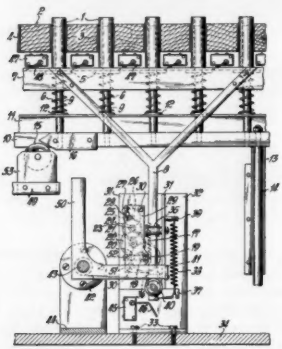
Filed Feb. 9, 1973, Ser. No. 331,027
Int. Cl. A63t *9/00*
U.S. Cl. 273—1 M **1 Claim**



The invention is a magnetic amusement device which embodies one or more control magnets rotably mounted, one or

more slave magnets rotably mounted in about the same horizontal plane as their respective control magnet(s), and one or more means for translating the motion imparted to the slave magnet(s) by the control magnet(s) to a visual effect, such as, for example, a system of pulleys and belts or of gears, etc.

3,817,519
PLAY CONTROL DEVICE FOR AMUSEMENT GAME
Xaver Leonhart, Pilsting/Ndb., 8381 Harburg b., Germany
Filed July 23, 1973, Ser. No. 381,394
Claims priority, application Germany, July 24, 1972, 2236285
Int. Cl. A63b *39/00*
U.S. Cl. 273—30 **10 Claims**



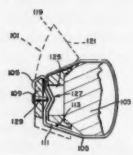
A plurality of tubular sleeves protruding from a plurality of bores positioned transversely across and at right angles to the playing direction of a large playing field of an amusement game effectively obstruct use of the playing field. The protruding sleeves are spring-mounted on a rack assembly which is retracted to effectively wind up a clockwork timer when the release rod of a coin controller is pushed inwardly after insertion of coins in the coin controller. Simultaneously the push rod elevates a plurality of pins through the hollow bores of the sleeves so that their ends protrude above the playing surface to obstruct the same as the ends of the sleeves are retracted below the playing surface, thereby making unauthorized jamming of the push rod to prevent operation of the clockwork timer ineffective. The clockwork timer is constructed to quickly return the sleeves to their protruding positions at the end of a predetermined time period and an alarm circuit is incorporated in the control device to send an alarm if unauthorized play is attempted by pushing the protruding sleeves inwardly without depositing coins.

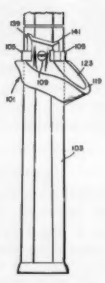
3,817,520
COILED RESILIENT BALL
D. Jose Soto Burgos, Eduardo Dato 21, Madrid, Spain
Filed Aug. 29, 1972, Ser. No. 284,618
Int. Cl. A63b *71/02*
U.S. Cl. 273—58 D **1 Claim**

A sporting game comprising a ball which can be hit between game players positioned on a fixed court. The ball consists of two coiled strips of a lightweight material, each of said strips defining a plurality of coils and each of said coils of a first one of said strips being perpendicular to the planes defined by the coils of a second one of said strips, at least one of the coils of said first strip being positioned between adjacent ones of said coils in said second strip, at least one of the coils of said second strip being positioned between adjacent ones of said coils in said first strip, said first and second strips being

secured together at right angles to each other at a predetermined area. The players, in a preferred embodiment, attempt to hit the ball over a net by means of special disc-like paddles.

3,817,521
TENNIS RACKET HAND POSITIONING STRUCTURE
Donald O. Wright, 26333 Belle Porte, Harbor City, Calif. 90710
Continuation-in-part of Ser. No. 145,379, May 20, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 232,065
Int. Cl. A63b *49/00, 49/08*
U.S. Cl. 273—75 **2 Claims**



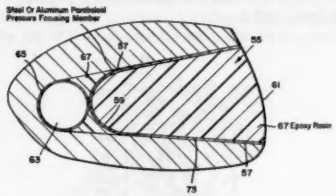


A structure, either an integral part of or an attachment to a tennis racket handle, including an upstanding backhand thumb-stop with a planar surface at a predetermined angle to the plane of the head of the racket, this planar surface being adapted to accept the pressure of the player's thumb when the racket is held in a backhand position and transmit this pressure to the handle in order to facilitate gripping the racket in the proper backhand position and to enable a player to more forcibly strike a tennis ball.

3,817,522
FORCE FOCUSING GOLF CLUB
Samuel P. Simmons, 1992-15 Rolling Vista Dr., Lomita, Calif. 90717
Continuation of Ser. No. 135,403, April 19, 1971, abandoned. This application Feb. 20, 1973, Ser. No. 333,665
Int. Cl. A63b *53/04*
U.S. Cl. 273—78 **3 Claims**

This is a golf club comprising a head and attached shaft wherein a pressure focusing means, such as a metal paraboloid

reflector, is disposed in a filled recess to reflect shock waves caused by a golf ball impacting on the impact face of the head.



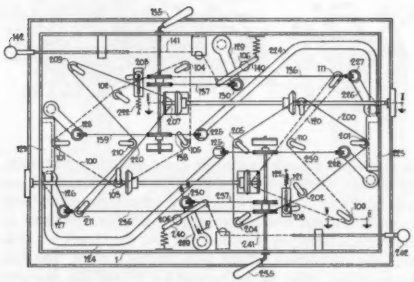
The head may also include a gas-filled chamber adjacent to the side of the reflector opposite the impact face.

3,817,523

TABLE BALL GAME WITH ALTERNATIVELY OPERATED ROTATABLE ATTACK AND DEFENSE PLAYERS

Rudolf Nolte, Karlsruhe, Germany, assignor to Philipp Stroh, Stegmuhle; Hermann Halt and Rudolf Nolte, both of Karlsruhe, all of, Germany

Filed Feb. 18, 1972, Ser. No. 227,508
Int. Cl. A63f *7/10*
U.S. Cl. 273—85 A **21 Claims**



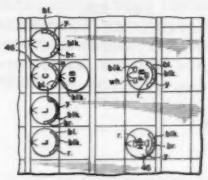
A table ball game, more particularly a table football game with player figures distributed over a playing area or field, and a ball moved by the said figures, each of the player figures, which are rigid, comprising a laterally projecting kicking leg, mounted so as to be capable of rotating about its longitudinal axis on a support forming the playing area, and the figures are adapted to be rotated by means of a drive which is operable by a handle, in such a manner that the kicking leg strikes against a playing ball situated in the region of rotational movement of the said leg. The player figures are divided into two teams with each team comprising an attack group and a defense group with means operatively connecting the player figures of each group for conjoint movement. A single-handle actuator for each team selectively actuates the attack or defense group. Openings for capturing the ball are connected to ducts for returning the ball to the playing area.

3,817,524

BOARD-TYPE GAME APPARATUS EMPLOYING PLAYING PIECES WITH SETS OF INDICIA THEREON

Richard G. Board, 3000 Connecticut Ave., Bethesda, Md. 20008

Continuation of Ser. No. 872,682, Oct. 30, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,473
Int. Cl. A63f *3/00*
U.S. Cl. 273—94 R **3 Claims**



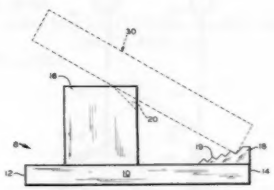
A football game having two sets of game pieces positionable on a game board, a chance spinner for determining play outcome and a player selector for indicating which game pieces are involved on a particular play. The spinner carries segmented areas of indicia of different colors. The circumferential lengths of such areas are statistically weighted so that certain areas are selected more often than others. Each of certain game pieces carries a set of indicia which is a sub-group of the indicia on the spinner. Different game pieces have different sub-groups depending on the type of player represented. Each game piece carries a player indicium and the player selector carries the same indicia. The contestants each selected a play formation and line their pieces up opposite each other on the game board. The offensive contensant uses the player selector to designate the ball carrier on a running play and to designate where the ball carrier will run. The spinner is spun to determine the outcome of play between opposing game pieces. If the color selected appears on an offensive piece, he is successful in blocking a defender. If the color does not appear on the offensive piece he is considered to have been overcome by the defender. The statistical weighting of the spinner is such that the play results are realistic.

3,817,525

LAUNCHING TEE FOR TIP CATS

Carl M. Henry, 1956 Franklin, Toledo, Ohio 43624

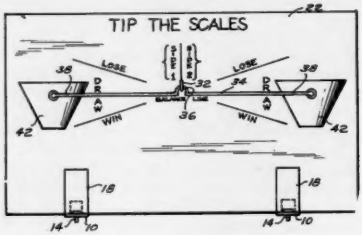
Filed Apr. 18, 1973, Ser. No. 352,212
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 F **2 Claims**



A launch device for a game involving a preliminary step of propelling with an appropriate club an elongated projectile into the air, said launching device being comprised basically of a cubically shaped wooden block affixed on a rectangularly shaped base, or platform, which platform, in turn, is adapted to rest on the ground, the cubical, wooden block having a V-shaped notch cut into one of the side faces and upper face of said wooden block and, in addition, the rectangularly shaped platform having an inclined series of notches on the end of the

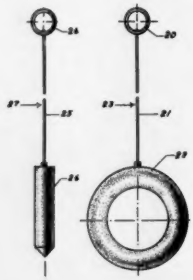
platform adjacent the notched faces of the cubically shaped wooden block, into which notches one end of the projectile rests, while the approximate middle of the projectile rests in the notched area of the block so that a portion of the projectile will rest above the block in a leaning manner, from which position the player can propel the projectile vertically into the air by hitting the exposed part of the projectile above the block.

3,817,526
TARGET SCALE BUCKETS AND BEAN BAGS
Roy Bibb, Port Neches, Tex., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 1, 1973, Ser. No. 384,474
Int. Cl. A63b *71/02*
U.S. Cl. 273—95 R **2 Claims**



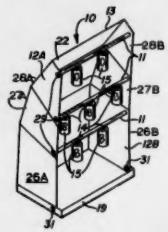
A pair of horizontally elongated parallel rails lie in a horizontal plane. A vertical plate is detachably secured to said rails and extends transversely across and upward therefrom. The plate has a central hole. A horizontal rod extends transversely across the plate and has a central coplanar region defining an inverted U. A support connected at one end to the hole extends outward at right angles to the plate and has a loop at the other end pivotally engaging the region. A separate bucket is pivotally secured at each end of the rod.

3,817,527
SUSPENDED TARGET AND PROJECTILE
Massud Karim Ghovanloo, 241 Soreward Dr., Great Neck, N.Y. 11022
Filed May 22, 1972, Ser. No. 255,510
Int. Cl. A63b *71/02*
U.S. Cl. 273—101 **7 Claims**



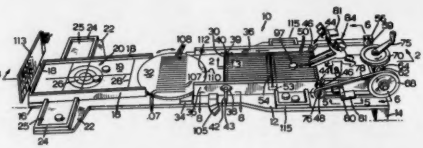
A swing-fit game comprising the assemblies of a male and a female three dimensional element which are respectively suspended from the hands of a user. The suspended members are manipulated such that the male member is made to swing into the female member.

3,817,528
TOY SHOOTING GALLERY WITH MAGNETICALLY HELD TARGETS
Eudora E. Stuhler, 2502 18th St., Plano, Tex. 75075
Filed June 16, 1972, Ser. No. 263,404
Int. Cl. A63b *71/02*
U.S. Cl. 273—102.4 **3 Claims**



A toy target gallery made from a flat pattern of cardboard folded to gallery shape. The gallery is also foldable in upon itself within a base box for storage and shipping with a supply of soft nosed darts and a dart gun also contained therein. Empty food or drink cans having steel bottoms are held in place as targets by magnets from which they are dislodged when solidly struck by a dart projectile fired by a player from the dart gun.

3,817,529
CURLING GAME
Edward C. Dobbins, P.O. Box 180, Black's Harbour, New Brunswick, Canada
Filed Feb. 1, 1973, Ser. No. 328,879
Int. Cl. A63f *3/00*
U.S. Cl. 273—126 R **7 Claims**

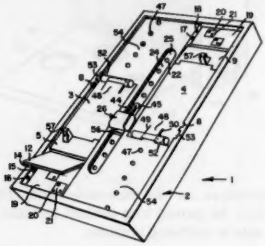


This invention provides a curling game including a smooth, flat surface on which a target area is painted. Playing pieces are conveyed by a conveyor between the flat surface and flush therewith at a speed which is manually variable. Recessed in the flat surface between the conveyor and the target is a disk of which the top surface is flush with the flat surface. The disk can be swivelled about its centre and has thread-like, parallel entraining means adapted to change the angle of travel of a playing piece whenever the direction of the entraining means differs from the direction of travel.

3,817,530
APPARATUS SUITABLE FOR PLAYING CARD GAMES
James Augustus Howard, 20733 Meadow Oak Rd., Saratoga, Calif. 95070
Filed Nov. 2, 1972, Ser. No. 303,089
Int. Cl. A63f *1/12, 1/14*
U.S. Cl. 273—135 R **15 Claims**

The invention is an apparatus suitable for playing a card game such as Poker, Black Jack, or the like without the use of playing cards. A box-like housing is provided which contains two belts. On one belt the values of playing cards are indicated in a regular rectangular grid. The second belt fits over the first belt and has a number of apertures or windows through which some of the card values on the first belt can be viewed. The

belts differ from each other in length by an integral multiple of the card length dimension on the card value belt. A shuffler knob or the like is provided for moving both the card value belt and the aperture belt an equal distance along their lengths. Because of the difference in length of the two belts and in their paths of travel through the box, the apertures are shifted relative to the card values. A sliding door is provided as a part of the top of the box-like housing. The sliding door can



be slid open one card at a time so that a player may view the cards thereunder. Generally, so that two players may play the card game, a second grid pattern of card values appears on the value belt, a second series of apertures on the aperture belt, and a second sliding door is provided whereby the hand of a second player can be exposed card by card. Provisions can also be made for more than two players by providing additional sliding doors, etc.

3,817,531

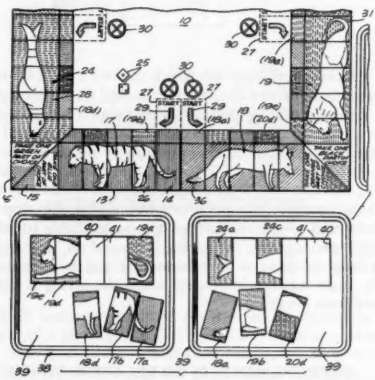
BOARD GAME APPARATUS

Tommie G. King, 11824 Tristan Dr., Downey, Calif. 90241, and Merlyn J. Snyder, 7923 Cole St., Downey, Calif. 90242

Filed Aug. 6, 1973, Ser. No. 385,884

Int. Cl. A63f *3/00*

U.S. Cl. 273—135 F **7 Claims**



A game which utilizes a game board having a course of playing spaces about the periphery thereof. Stations comprised of a plurality of playing spaces are provided on the sides of the game board and the playing spaces in each of the stations have a distinctive background color. A color block having the color of any of the stations is associated with each of the playing spaces. A tray having a storage area and an assembly area is disposed adjacent each station of the game board. In the storage area of each tray, picture parts having a background color corresponding to the background color of the station are initially stored. Dice are provided to advance a player about the course. When a player lands in a playing space he acquires the picture part identified by its associated color block. During the course of the game, each player elects to assemble in the assembly area of his tray picture parts having a common background color and the first player to complete a picture is declared the winner of the game.

3,817,532

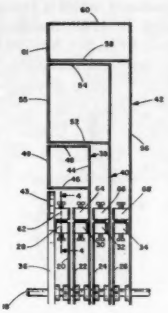
INDEPENDENTLY ROTATABLE INDICIA DISCS AND BRAKING MECHANISM THEREFOR

Ronald R. Lee, 4421 Laurel Canyon, Studio City, Calif. 91607

Filed June 26, 1972, Ser. No. 265,979

Int. Cl. A63f *5/04*

U.S. Cl. 273—142 HA **6 Claims**



An amusement device comprising a plurality of rotatable wheels that can be rotated independently of one another either clockwise or counterclockwise. Each wheel is divided into sectors and each sector bears different indicia. Braking mechanism is provided and constructed so that all of the sectors of one wheel are aligned with all of the sectors of another wheel or with all of the sectors of the other wheels at the time the wheels have ceased moving. The braking mechanism is in the form of first brake shoes attached to the respective wheels and second fixed brake shoes which are radially aligned with respective first brake shoes when the indicia sectors are aligned. The first and second brake shoes have cooperating contoured surfaces, are resiliently radially biased into engagement with each other, and are provided magnets to aid in the alignment of the indicia sectors.

3,817,533

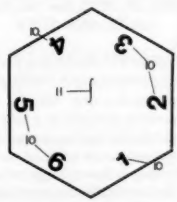
EDUCATIONAL CARD GAME

Charles B. Leidenfrost, 3957 Warner Ave., Apt. A-2, Hyattsville, Md. 20784

Filed May 23, 1973, Ser. No. 362,221

Int. Cl. A63f *1/02*

U.S. Cl. 273—152.1 **1 Claim**



An educational game comprising a set of polygonal cards. The cards are each provided with a pictorial illustration on the front side and markings associated with each of the front side

edges identifing a corresponding number of categories of relationships to the illustration. The reverse sides of the cards having markings along their edges corresponding to the markings along the front side edges and a printed summary which establishes a cognative relationship between the illustration and the categories defined by the markings.

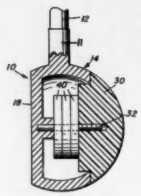
3,817,534
GOLF CLUB

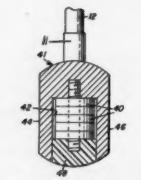
Anthony L. Carlino, 138 Woodland Ave., New Rochelle, N.Y. 10805

Division of Ser. No. 864,930, Sept. 11, 1969, Pat. No. 3,637,218, which is a continuation-in-part of Ser. No. 825,093, April 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,256, Sept. 20, 1969, abandoned. This application Nov. 2, 1971, Ser. No. 194,997

Int. Cl. A63b *53/04*

U.S. Cl. 273—168 **8 Claims**





An instrument to accurately propel a golf ball comprising a shaft and a hollow, generally spherical body having at least one flat striking surface wherein the loci of the radii of said spherical body is at its center of gravity, and weight means positioned interiorly of said hollow body.

3,817,535
GOLF PUTTING DEVICE

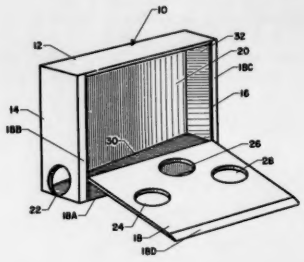
Robert H. Doughty, 5970 N.W. 18th Ct., Fort Lauderdale, Fla. 33314

Filed Oct. 10, 1972, Ser. No. 221,591

Int. Cl. A63b *57/00*

U.S. Cl. 273—180 **1 Claim**

A similated golf game for allowing a player to practice and improve his putting comprising a rectangular box structure, vertically disposed, having one side of said box structure moveable from a vertical position to a substantially horizontal position, said moveable side having a plurality of aperatures to similate of golf holes or moon craters, an angularly disposed floor, said floor having a lower edge adjacent an aperature placed in one of the vertically disposed sides. The player attempts to place a golf ball using his putter into one of the aperatures disposed on the moveable side which has been horizontally disposed. An overshot ball will enter the box-like structure, strike the angularly disposed bottom floor and will roll out of the box structure through the side aperature allowing the player to recover the ball. The game may be scored by allowing particular points or number of shots to get into



respective aperatures on the moveable side. The game is portable and may be moved to a desired location by placing the moveable side in its closed position.

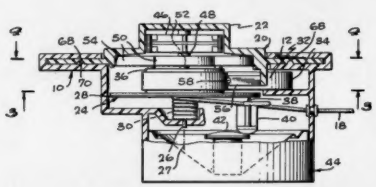
3,817,536
SELECTABLE VOICE UNIT

Gordon H. Buck, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Continuation of Ser. No. 147,938, May 28, 1971, abandoned. This application Oct. 24, 1972, Ser. No. 300,096

Int. Cl. G11b *3/00*

U.S. Cl. 274—1 A **18 Claims**



A simple toy phonograph which enables a child to rotate a selector dial to select one of several sound tracks to be played. The phonograph includes a turntable with a record that carries several spiral grooves, the groove to be played being determined by the rotational position by which the turntable stops during windup of the spring. In one phonograph, the spring carries a stop, so that as the spring becomes fully wound onto the turntable, the spring stop engages another stop on the selector dial to prevent further reverse turntable rotation. In another phonograph, the spring is carried on, and anchored to, a drum mounted on the selector dial, and the turntable suddenly stops rotating in reverse when the spring is fully unwound from the drum.

3,817,537
IMPROVEMENTS IN OR RELATING TO THE PRODUCTION OF DISC RECORDS

George Charles Newton, Uxbridge; Alfred Luigi Westlake, Ashford, and Frederick George Humphrey Elphick, Iver, all of England, assignors to EMI Limited, Hayes, Middlesex, England

Filed July 20, 1972, Ser. No. 273,549

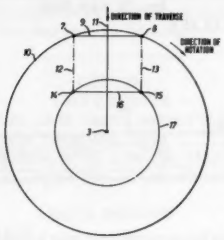
Claims priority, application Great Britain, Aug. 5, 1971, 36746/71

Int. Cl. G11b *3/00*

U.S. Cl. 274—46 R **3 Claims**

Disc records are produced by operating on a rotating layer of recording medium. The recording apparatus includes lead-

ing means for preparing the surface of the layer by planing away material to a fixed level, either in the form of a flat surface or in the form of a groove, and trailing means, in the form of a laser, for impressing information on the prepared surface. The leading and trailing means are disposed to operate on the



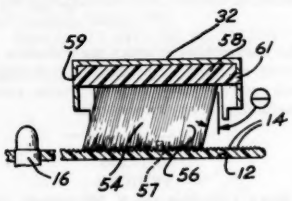
surface at spaced positions which are located at opposite ends of a chord of a circle coaxial with the axis of rotation of the disc, and they are traversed across the surface in a direction parallel to the perpendicular bisector of the chord.

3,817,538

BRUSH FOR PHONOGRAPH PICK-UP APPARATUS

Paul W. Jenrick, Mount Prospect, Ill., assignor to Shure Brothers, Inc., Evanston, Ill.

Filed Mar. 9, 1973, Ser. No. 339,961
Int. Cl. G11b *3/58*
U.S. Cl. 274—47 **6 Claims**



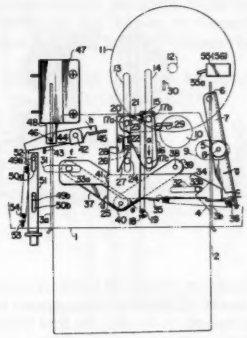
A brush assembly mounted on the pick-up apparatus or tone arm of a phonograph is provided for cleaning a phonograph disc. The brush bristles are connected to a brush-mounting bracket and in the preferred embodiment are grouped together in any suitable configuration, such as a substantially rectangular cross-sectional shape. The bristles are substantially parallel with respect to one another. In operative position, the bristles are oriented toward and angled toward the center of the disc, to offset the skating force caused by the brush contacting the record grooves. The longitudinal axis of the cross section of the group of brush bristles is oriented at an acute angle away from the direction of movement of the disc grooves at the point of contact between the brush and the groove to continuously sweep dust particulate on the phonograph disc toward the center of the record without contacting the stylus.

3,817,539

MAGNETIC RECORDING AND REPRODUCING APPARATUS WITH AN AUTOMATIC CARTRIDGE REMOVER

Toshio Kawada, Neyagawa; Tadashi Torama, Osaka, and Tamio Kobayashi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1971, Ser. No. 203,347
Claims priority, application Japan, Dec. 4, 1970, 45-107701; Apr. 6, 1971, 46-21545; May 7, 1971, 46-30243
Int. Cl. G11b *25/06*
U.S. Cl. 360/93 **4 Claims**



A magnetic recording and reproducing apparatus with a novel construction in which a positioning roller is pressed into a recess formed on the side of a cartridge to load the cartridge on the apparatus, the cartridge being automatically ejected on completion of a performance.

ERRATUM

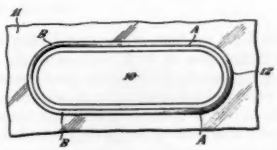
For Class 277—165 see:
Patent No. 3,817,517

3,817,540

WASHERS AND GASKETS

Terence Peter Nicholson, Calf Hall, Muggleswick, County Durham, England

Filed Apr. 17, 1972, Ser. No. 244,600
Claims priority, application Great Britain, Apr. 27, 1971, 11594/71
Int. Cl. F16j *15/08*
U.S. Cl. 277—236 **8 Claims**

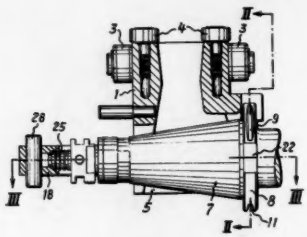


A washer or gasket consisting of two apertured layers of metal secured to one another, the upper layer being provided with one or more corrugations surrounding the or each aperture whereby the clamping load on a washer or gasket located between two mating surfaces is concentrated on said corrugations which seal their associated apertures. The lower layer is secured to the upper layer in such a manner as to assist the corrugations in their resistance to being flattened by the clamping load.

3,817,541
HOLDER MECHANISM EQUIPPED WITH A TOOL HOLDER RETAINED THEREIN

Erich Grabher, Dietlikon, Switzerland, and Anton Donhauser, Hohentengen, Germany, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed Sept. 25, 1972, Ser. No. 291,540
Claims priority, application Switzerland, Oct. 1, 1971, 14326/71
Int. Cl. B23b 31/04
U.S. Cl. 279—1 R 4 Claims

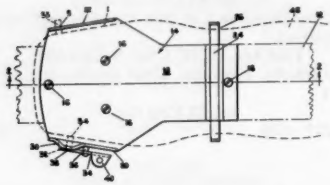


A holder mechanism with a tool holder retained therein and comprising a carrier arranged at stops against which there is displaceable transverse to its axis the tool holder. A locking element is displaceably arranged at the carrier in axial direction of the tool holder for locking the tool holder displaced against the stops.

3,817,542
SKI BOOT BINDING

David A. Zaagman, Aspen, Colo., assignor to Ed Zaagman, Inc., Grand Rapids, Mich.

Filed June 5, 1972, Ser. No. 259,517
Claims priority, application Norway, June 7, 1971, 2128/71
Int. Cl. A63c 9/18
U.S. Cl. 280—11.35 B 8 Claims

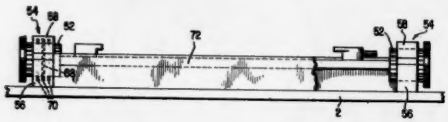


A binding for a ski boot of the type having a pair of outwardly projecting pins at front portions of the sole thereof. The binding is primarily designed for cross-country skiing and includes a plate which is adapted to be secured to the top surface of a ski. A pair of upstanding retaining flanges extend upwardly from a front end of the plate, each of the upstanding flanges including a means to engage and retain an outwardly projecting pin on the sole of the boot. Means are provided on the retaining flanges for releasing the pins from engagement with the engaging and retaining means. A U-shaped bracket is fixed to a rear portion of the plate with the legs of the bracket extending upwardly from the ski to engage the sides of the boots retained by the binding. In one embodiment, at least one of the pins is spring loaded and the releasing means comprises a lever pivotably mounted to an upstanding flange, the lever having a camming portion adapted upon actuation to bear against the spring loaded pin to release the pin from engagement with the retaining flange. In another embodiment, the pins are fixed within the boots, a slot is provided in the retaining flanges for reception of the pins, and a spring biased latch retains the pins within the slot.

3,817,543
ADJUSTABLE HARNESS FOR SKI BOOT

William B. Haff, 2623 S. Grant St., Arlington, Va. 22202

Filed July 24, 1972, Ser. No. 274,800
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 C 4 Claims



A ski harness for securing a ski boot to a ski includes adjustment features which permit canting of the boot relative to the ski and means whereby the boot harness may be locked into a variety of angular positions. The device also provides toe-in/toe-out adjustablility as well as fore and aft longitudinal movement.

3,817,544
SKI FOR SNOWMOBILE

Richard L. Labelle, 405 Wood St., Sherbrooke, Quebec, Canada

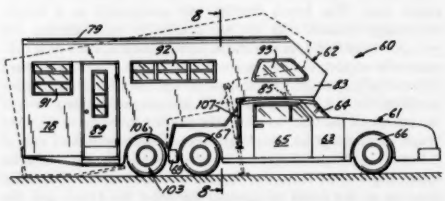
Continuation-in-part of Ser. No. 150,155, June 4, 1971, Pat. No. 3,734,221. This application Sept. 20, 1972, Ser. No. 290,704
Int. Cl. B62m 27/02
U.S. Cl. 280—28 5 Claims

A ski for snowmobiles in which the underface of the ski is provided with a central longitudinal groove with ground-engaging wear rods on each side of the groove, resulting in improved steerability for any snowmobile.

3,817,545
VEHICLE

Bruce K. Ward, 1338 First Ave. S., Minneapolis, Minn. 55403

Filed Sept. 8, 1972, Ser. No. 287,501
Int. Cl. B60d 1/00; B60p 3/32
U.S. Cl. 280—34 R 28 Claims



A vehicle having a power unit and a housing removably mounted with a break-open hitch assembly on the power unit.

The power unit has an open top body that is covered by the housing. The front portion of the housing has an opening providing access between the interior of the housing and the driver-passenger compartment of the power unit, permitting full concurrent use of the housing and driver-passenger compartment. A wheel and axle assembly behind the power unit supports the housing. The hitch assembly has a first forwardly directed member and a second forwardly directed member articulately connected together. The members are releasably attached to cooperating structure on the power unit whereby the housing will initially swing upwardly so that the power unit can be readily detached from the housing.

3,817,546

LIFT CARRIER

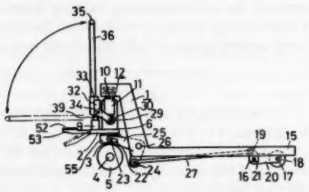
Yoshikazu Sugiura, Aichi, Japan, assignor to Sugiyasu Kogyo Kabushiki Kaisha, Takahama, Japan

Filed Mar. 9, 1972, Ser. No. 233,040

Claims priority, application Japan, Mar. 15, 1971, 46-17240

Int. Cl. B66f *9/06*

U.S. Cl. 280—43.12 **13 Claims**



An improved lift carrier having a platform and a first means for lifting said platform under load and a quick-lift mechanism operative alternately in respect to said first means for raising the platform quickly when there is no load or only a light load.

3,817,547

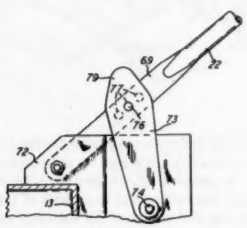
LAWN MOWER HANDLE MOUNTING

Donald G. Erickson, Racine, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Jan. 11, 1973, Ser. No. 322,890

Int. Cl. B62b *3/00*

U.S. Cl. 280—47.37 **4 Claims**



A rotary lawn mower including a mower housing and ground supporting wheels at the front and rear of the housing. A mower handle is pivotally mounted at the rear end of the housing but forwardly of the plane of the rear wheels. A support strap is pivotal on the mower housing and rearwardly of the pivot point of attachment of the handle to the mower housing, and the strap extends upwardly to the handle and is connected thereto through a pin which engages selected openings in the handle for selected angulation of the handle relative to the mower housing. The support piece or strap is therefore placed under compression when the operator presses downwardly on the hand grip end of the handle, and thus tipping control or steering control of the mower is readily accomplished. A spring extends between the strap and the mower for urging the strap into support position with the handle, but also the spring releases the strap for ready positioning of the strap in selected angulated positions of the handle relative to the mower.

3,817,548

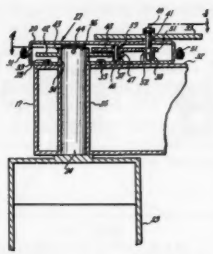
METHOD AND APPARATUS FOR STABILIZING A CASTER WHEEL AGAINST WHIP ACTION

Frank A. De Puydt, and Eugene P. Conradi, both of Des Moines, Iowa, assignors to Dico Company, Inc., Des Moines, Iowa

Filed June 28, 1971, Ser. No. 157,233

Int. Cl. B60b *33/00*

U.S. Cl. 280—89 **4 Claims**



The stabilizing or anti-whip device has a fly wheel or like mass member rotatably supported on the vehicle frame adjacent the caster wheel assembly which has an upright shaft or king pin rotatably carried on the upright frame. The fly wheel shaft is interconnected with the king pin for rotation at an increased rate relative to the rotation of the king pin so as to restrain or inhibit oscillation of the caster wheel in response to forces acting on and tending to whip the caster wheel.

3,817,549

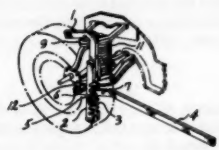
AUTOMOTIVE SUSPENSION BALL JOINT CHECKING MECHANISM

James P. Bohannon, Seattle, Wash., and Loyd O. McAfee, Salinas, Calif., assignors to Lloyd O. McAfee, Seattle, Wash.

Division of Ser. No. 177,314, Sept. 2, 1971, Pat. No. 3,719,346, which is a division of Ser. No. 768,418, Oct. 17, 1968, Pat. No. 3,612,485. This application Oct. 16, 1972, Ser. No. 297,758

Int. Cl. B62d *7/00*

U.S. Cl. 280—96.2 A **1 Claim**



A hanger suspended by a hook from the upper control arm of an automotive wheel support carries a disengageable lever, the short end of which engages beneath the lower control arm. Downward swinging of the long arm of the lever will contract the tongs formed by hook and short lever arm engaged with the upper and lower control arms and straddling the com-

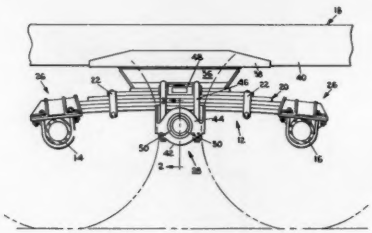
pression spring engaged between them. The fulcrum pin of the lever is engageable selectively with any set of socket notches in furcations of the hanger for application to differently spaced control arms. Contraction of the tongs compresses the spring between the control arms to relieve the ball joints between the spindle support and the control arms from load so that the amount of backlash between the spindle support and the control arms can be checked.

3,817,550

VEHICLE SUSPENSION SYSTEM AND BEARING CONSTRUCTION THEREFOR

Edward L. J. Young, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Nov. 15, 1972, Ser. No. 306,550
Int. Cl. B60g *5/02*
U.S. Cl. 280—104.5 A **13 Claims**



A vehicle suspension construction in which axles of vehicles are supported by a suspension system coupled to the vehicle through at least one structural cylindrical support such as a shaft. The suspension system has a collar which surrounds the cylindrical support and is separated therefrom by a novel bearing construction including a yielding cylindrical member such as a rubber bushing compressed radially inwardly by the collar and a substantially cylindrical lubricating liner between the yieldable member and the cylindrical support to permit rocking of the suspension system or portions thereof about the cylindrical support. In one embodiment, the collar is in two parts and is tightened against the compressible member. In another embodiment, the collar is an annular cylinder as, for example, on the end of a rockable arm, and the yieldable member is compressed by being press-fit into the annular cylinder. A sleeve on a shaft forms the cylindrical support and the liner is positioned between the yieldable member and the sleeve in this second embodiment. The lubricating liner which can be made of a self-lubricating material such as Teflon, polyethylene, polypropylene, etc., is split and has an inner diameter or inner circumference slightly less than the outer diameter of the cylindrical support to leave a space for expansion of the liner due to wear in the use of the suspension system. The liner is protected from dirt, moisture, etc., by the yieldable member which extends over the ends of the liner and in contact with the cylindrical support.

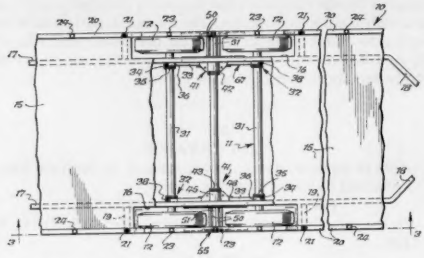
3,817,551

TANDEM AXLE VEHICLE SUSPENSION

Robert G. Moore, Elkhart, Ind., assignor to Hickman Developments, Inc., Eden, N.Y.

Filed July 28, 1972, Ser. No. 276,030
Int. Cl. B60g *5/02*
U.S. Cl. 280—104.5 A **9 Claims**

Tandem axles, supported by rubber tired wheels, support the ends of a walking beam at each side of the vehicle. The frame includes a flat bed panel having side recesses housing the wheels. Bed panel edge bars are fast to the opposite edges of the bed panel and include bridge portions arching over the recesses. A first frame bracket depends from each bridge portion. A second frame bracket is fixed, at the center of each recess, to a main longitudinal side frame beam supporting the bed panel. Rectilinear movement shear rubber spring means



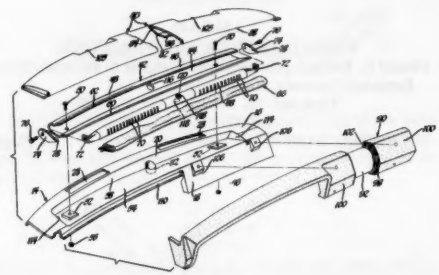
support each pair of such first and second frame brackets on the centers of the corresponding walking beams. The metal parts of these spring means, as well as the frame brackets, are formed and welded plates of light and simple construction.

3,817,552

OCCUPANT RESTRAINT SYSTEM

John W. Knight, IV, Mt. Clemens; Herbert A. Libkie, Marlette; Ben C. Parr, Orchard Lake, and Carl M. Savage, Jr., Milford, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1972, Ser. No. 283,642
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



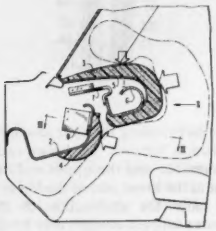
A vehicle body instrument panel includes an upper wall provided with a generally L-shaped recess extending transversely of the body. A generally U-shaped housing has its lower leg seating on and secured to the base wall of the recess and the bight portion thereof adjacent the forward wall of the recess. An elongated diffuser complementary in shape to the bight portion is fitted therewithin. The flattened ends of the diffuser are secured to the side walls of the housing. An inflatable cushion has one closed end receiving the diffuser and inflated therefrom. A cover has a return bent forward leg secured to the upper leg of the housing and the rear edge thereof received within a groove of an energy absorbing cover of the instrument panel. An inflator has an outlet neck projecting through the upper wall of the instrument panel and the lower leg of the housing into the diffuser. A bayonet-type connection releasably secures the inflator to the diffuser.

3,817,553

SHOCK-ABSORBING FRONT-WALL FOR MOTOR VEHICLES

Karl Wilfert, Gerlingen-Waldstadt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Dec. 15, 1971, Ser. No. 208,315
Claims priority, application Germany, Dec. 15, 1970, 2061595; Dec. 23, 1970, 2063478
Int. Cl. B60r 21/04
U.S. Cl. 280—150 B 13 Claims



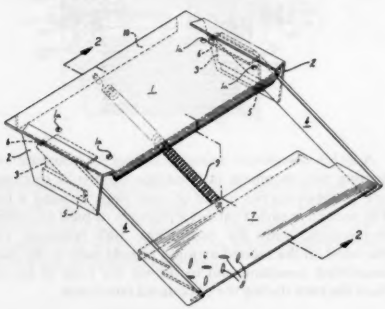
A shock-absorbing front wall for motor vehicles, especially passenger motor vehicles which includes several sections, arranged one above the other, of padded parts projecting into the vehicle interior and permanently deformable by the impact of a vehicle passenger caused by an accident; these sections which are arranged one above the other thereby possess different rigidities and/or thicknesses of the padding layer matched to the impinging body portions; an inflatable gas cushion may also form part of a respective section.

3,817,554

STEP-UP DEVICE

Moses L. Cuffe, 715 Arastradero Rd., Palo Alto, Calif. 94306, and Ralph L. Frese, 3109 Ross Rd., Palo Alto, Calif. 94303

Filed May 24, 1972, Ser. No. 256,414
Int. Cl. B60r 3/02
U.S. Cl. 280—166 1 Claim



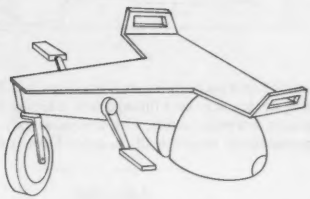
A highly improved disappearing and retractable step for use with motor vehicle bodies such as mobile homes, trailers, campers, and the like combines a novel combination of slide, guide and operating means whereby a step which is normally safely positioned underneath the body while the vehicle is in transit may be rapidly withdrawn and positioned for safe access using a combined rotating and translation motion but eliminating the need for many mechanisms such as cams, slots, and guides which have characterized previous devices. At the same time the device permits for rapid return through spring action to its safe position under the vehicle.

3,817,555

VEHICULAR STEERING SYSTEM

Dennis L. Kennedy, Columbus, Ohio, assignor to Martec Corporation, Columbus, Ohio

Filed Oct. 13, 1971, Ser. No. 188,981
Int. Cl. B62k 9/02
U.S. Cl. 280—266 4 Claims



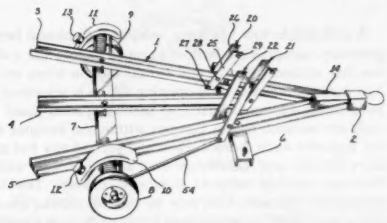
This steering system concept is designed to provide positive directional control through a shifting of the center of mass of the rider (or load) with no necessary manipulation of a conventional steering control system (i.e. wheels, levers, etc.). The system is here illustrated on a children's vehicular toy, however it can be adapted to a variety of applications from theraputic devices to heavy equipment. A vehicle utilizing this system could be manually powered through pedals (as illustrated) or other manual devices or it could be powered by a variety of gasoline or electric motors with drive applied to any of the wheels.

3,817,556

MOTORCYCLE TRAILER

Bengt E. Nyman, 5514 S. Crow's Nest Rd., Tempe, Ariz. 85283

Filed Feb. 12, 1973, Ser. No. 331,665
Int. Cl. B62d 53/00
U.S. Cl. 280—400 10 Claims



A readily dismantleable rigid motorcycle trailer is disclosed. Each of a plurality of upwardly oriented U-shaped channels, in combination with crossmembers, form the body of the trailer. The channels and crossmembers are secured to one another by nuts and bolts exclusively and define a plurality of overlapping triangles to provide a rigid body without additional structural members. A swing arm suspension system provides high ground clearance while maintaining a low center of gravity.

3,817,557

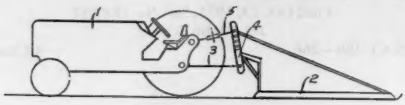
OVERLOAD RELEASE MECHANISM FOR THREE-POINT HITCH DEVICE ON TRACTORS

Gedalyahu Manor, Haifa, Israel, assignor to Technion Research and Development Foundation, Ltd., Haifa, Israel

Filed Mar. 6, 1972, Ser. No. 232,229
Claims priority, application Israel, Mar. 5, 1971, 36358
Int. Cl. B62d 53/00
U.S. Cl. 280—452 8 Claims

To prevent twist on the hitches of a three-point hitch if an implement pulled by a tractor meets an obstruction and one

hitch releases, the retaining levers on the outer hitches are interconnected by a force transmission element which includes a quick-release snap, or toggle acting device to reduce the

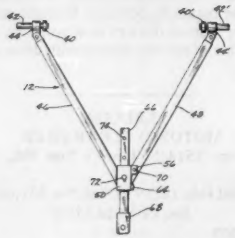


retaining force on both levers if one trips out. The force transmitting device may be a linkage with a spring-loaded toggle, a hydraulic interconnection with a bleeder valve acting against compressed air, magnetically coupled links or the like.

3,817,558
COLLAPSIBLE TOW BAR

Mathias Eger, 3418 5th Ave. South, Fort Dodge, Iowa 50501

Division of Ser. No. 264,536, June 20, 1972. This application May 16, 1973, Ser. No. 360,736
Int. Cl. B60d 1/16
U.S. Cl. 280—491 D **4 Claims**



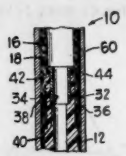
A collapsible tow bar for a vehicle is disclosed herein and generally comprises a hollow bumper having the collapsible tow bar secured thereto and stored therein when not in use. The bumper has a central opening which is selectively closed by a cover element. First and second spaced apart support rods are secured to the bumper within the bumper adjacent the opposite ends thereof. First and second tow bar members are rotatably and slidably secured at one of their ends to the first and second support rods respectively. The first and second tow bar members may be slidably moved inwardly on the support rods to permit their other ends to be extended outwardly of the central opening in the bumper. The other ends of the first and second tow bar members are adapted to be secured together and are adapted to have a tongue member detachably secured thereto.

3,817,559
RISER ASSEMBLY

John D. Tricini, Greensburg, Pa., assignor to Kerotest Manufacturing Corp., Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,191
Int. Cl. F16l 11/12
U.S. Cl. 285—47 **10 Claims**

A riser assembly for the connection of an underground gas line to a meter or other device includes a tubular polyethylene adapter having its lower end connected to the upper end of a polyethylene tubular member, which is connected at its lower end to the underground pipeline. A connecting sleeve of corrosion resistant, electrically nonconductive material, such as a combination of fiber glass and epoxy resin, maintains the upper end of the adapter in spaced relationship to the lower end of a metallic tubular member, which is connected at its upper end to the meter or other device. A polyethylene support sleeve surrounds the outer surface of the mutually connected end portions of the adapter and the lower tubular member. The adjacent ends of the lower portion connecting sleeve and upper portion of the adapter are maintained in fluid-tight engagement by the combination adapter support sleeve and resilient O-ring secured in the upper portion of the adapter. The riser assembly can also include a metallic outer

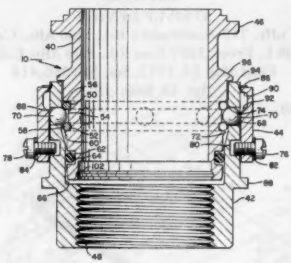


support conduit surrounding the riser assembly and extending from the connection between the lower end of the metallic upper tubular member and the upper end of the connecting sleeve to a point at the lower end of the lower polyethylene tubular member near the connection to the underground pipeline. The outer support conduit may be closed for storage or transport at its upper end by an epoxy seal and at its lower end by a resilient end plug.

3,817,560
QUICK DISCONNECT SWIVEL COUPLING

Robert W. Guertin, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,198
Int. Cl. F16l 15/00
U.S. Cl. 285—90 **12 Claims**



A quick disconnect swivel coupling for cooperatively connecting two members in rotatable fashion is disclosed. The one member carries a pair of race rings forming a ball race. The second member carries a plurality of balls for cooperative engagement with the race rings. Ball retaining means is mounted on the second member to hold balls in the race in the assembled condition and to permit the balls to be retracted from the race during the uncoupled condition.

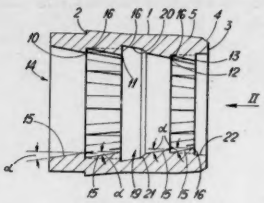
3,817,561
PIPE JOINT CONNECTOR

Francis Xavier Kay, Winslow, England, assignor to Instruments and Movements Limited, London, England

Filed Dec. 8, 1971, Ser. No. 205,953
Claims priority, application Great Britain, Dec. 31, 1970, 62089/70
Int. Cl. F16l 25/00
U.S. Cl. 285—177 **7 Claims**

A pipe joint, especially for pipes of soft or resilient, e.g. plastics, material and in the sizes used in fluidics systems, com-

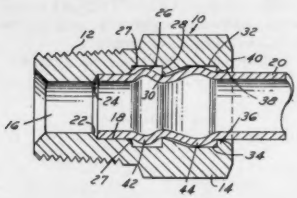
prises a connector body having an orifice sized to receive a pipe to be connected thereto and, internally, two or more sharp-edged ribs one of which is interrupted to provide a ring of teeth, the entry face of each rib being ramped and extending from a diameter, at the rib edge, less than the nominal external diameter of the pipe to a diameter greater than the nominal external diameter of the pipe. The body may have two or more pairs or sets of ribs sized to suit pipes of respectively different nominal external diameter.



3,817,562
CONNECTOR FOR PLASTIC TUBE

Roger J. Cook, and Donald E. McGeachy, both of Highland, Mich., assignors to Numatics, Incorporated, Highland, Mich.

Filed July 14, 1972, Ser. No. 271,923
Int. Cl. F16l *33/00*
U.S. Cl. 285—238 **5 Claims**



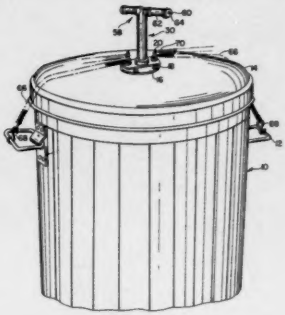
A one-piece tube connector for plastic tubes having a tube receiving end to provide a sealing engagement and a locking engagement operating on the outer diameter of the tube to prevent accidental withdrawal and to allow pneumatic functioning with gas or liquid under pressure.

3,817,563
CAN TOP LOCK

Charles J. McGlothlin, Rt. 1, Box 198, Madison Heights, Va. 24572

Filed July 6, 1973, Ser. No. 377,156
Int. Cl. E05c *9/00*
U.S. Cl. 292—254 **8 Claims**

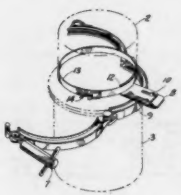
A can top lock for garbage cans and the like to prevent the top from coming off the can if upset, and which additionally functions as a top handle. Springs are removably attachable to the top handle and engageable with side handles on the can to hold the top on the can under tension, with the springs being disengaged from the top handle upon lifting of the handle and top to which attached.



3,817,564
CLAMP ASSEMBLY FOR PRESSURE VESSEL

Arnold Victor Baldwin, Wilton, Conn., and Walter Johnson, Jr., Port Chester, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Oct. 24, 1972, Ser. No. 300,152
Int. Cl. E05c *19/18*
U.S. Cl. 292—256.67 **4 Claims**



A clamp assembly is provided suitable for use with a two part pressure vessel, employing an integral bracket affixed thereto. The clamp is adapted to positively seat at the parting line between the two parts of such vessel. The bracket structure includes two flat members disposed on top of one another with the upper member slidably connected to the lower member and the lower member affixed to the clamp. The top bracket member is provided with a flange which engages a band that is suitably fastened about the periphery of the top portion of the pressure vessel. When it is desired to separate both halves of the vessel, the clamp is released and is urged to laterally move within a prescribed distance as governed by a pair of slots in the top bracket member.

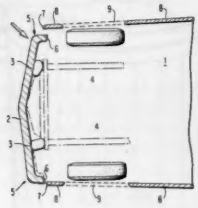
3,817,565
BUMPER FOR MOTOR VEHICLES

Friedrich Geiger, Boblingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Dec. 1, 1972, Ser. No. 311,146
Claims priority, application Germany, Dec. 3, 1971, 2159946
Int. Cl. B60r *19/06*
U.S. Cl. 293—63 **12 Claims**

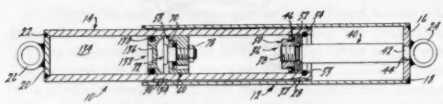
A bumper for motor vehicles, particularly for passenger motor vehicles, which is supported at fixed vehicle parts, such

as at longitudinal bearers by way of at least two elastically deformable deformation members; the bumper is bent-off at its ends while bumper bars are provided on both sides of the vehicle which extend up to the wheels cutouts of the wheel



casings and are secured at the vehicle body; the bumper is thereby so arranged between the bumper bars that its ends are freely displaceable with respect to the bumper bars both in the vehicle longitudinal direction as also transversely with respect thereto.

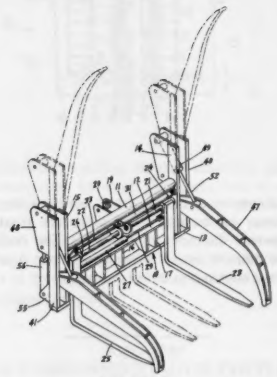
3,817,566
ENERGY ABSORBER
Johan H. Keijzer, Hasselt; Willy R. J. Pierle, Tienen, and G. Van de Voordf, Sint-Martent-Latem, all of Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium
Filed Mar. 13, 1972, Ser. No. 234,085
Int. Cl. B60r *19/06*
U.S. Cl. 293—70 **11 Claims**



An energy absorber for vehicle bumpers and the like comprising a pair of telescopic tubular housings, attachment means for securing one of the housings to the vehicle frame and the other of the housings to the vehicle bumper, a piston located in one of the housings movable longitudinal thereof in response to a preselected impact force being applied to the energy absorber, a pressurizable chamber located in one of the housing members and valve means interposed between the chamber and the piston for selectively controlling the flow of fluid from one side of said of the assembly to the other side thereof to effect pressurization and de-pressurization of the chamber in response to the application and relief of the impact force.

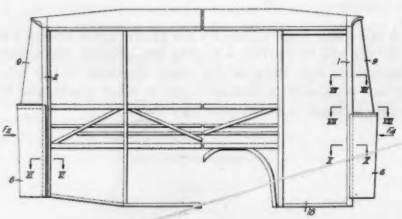
3,817,567
VERSATILE UTILITY CARRIAGE FOR MOBILE LOADERS
Le Grand H. Lull, Minneapolis, Minn., assignor to Lull Engineering Company, Inc., Minneapolis, Minn.
Filed June 8, 1972, Ser. No. 260,761
Int. Cl. B66c *1/22*
U.S. Cl. 294—88 **10 Claims**

A versatile utility carriage for mobile loaders which is capable of lifting and carrying a variety of objects of varying sizes and shapes including long pipe, conduits and poles, spools and coils and crates of varying sizes. The carriage is characterized by lift forks which are movable laterally to accommodate pallets of varying sizes and hold-down fingers carried in vertically movable slides for grasping and holding articles, or for out-of-the-way vertical placement to permit the carriage to accommodate large bulky objects. The carriage is mountable on the boom structure of a front end loader for the usual movements



including vertical lifting movement, longitudinal movement for stacking and unstacking, tilting movement, and the like.

3,817,568
FRONT OR BACK PANEL FOR MOTORBUSES, AND SHAPED BAR USED IN SUCH PANEL
Hilaire Beelen, Kehlen, Luxembourg, assignor to Sebia S.A. Holding, Luxembourg, Luxembourg
Filed July 25, 1972, Ser. No. 274,887
Claims priority, application Luxembourg, Jan. 24, 1972, 64852
Int. Cl. B62d *25/08*
U.S. Cl. 296—28 A **2 Claims**

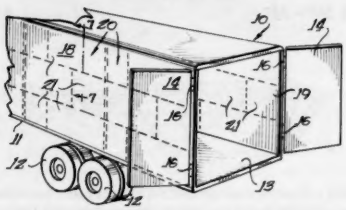


The invention pertains to a front or back panel for motorbuses, having an arcuate framework, the vertical edges of which are constituted each by a shaped bar designed for imparting great strength to said panel, said bar serving as an upright of the body of the motorbus during the assembly of the latter.

3,817,569
TRAILER SIDE PANEL CONSTRUCTION

Donald J. Ehrlich, Monon, Ind., assignor to Monon Trailer Inc., Monon, Ind.

Filed Oct. 25, 1972, Ser. No. 300,663
Int. Cl. B62d *33/04*
U.S. Cl. 296—28 M **10 Claims**

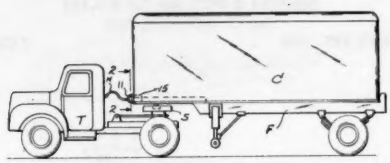


The embodiment of the invention disclosed herein is directed to a wood fabricated wall-forming structure used in the manufacture of trailer truck bodies, or the like.

3,817,570
TRANSPORT CARRIER AND CONTAINER SECURING STRUCTURE

Edwin B. Connerat, Alexandria, Va., assignor to Hennessy Products Incorporated, Chambersburg, Pa.

Filed Mar. 28, 1972, Ser. No. 238,821
Int. Cl. B62d *27/06*
U.S. Cl. 296—35 A **6 Claims**



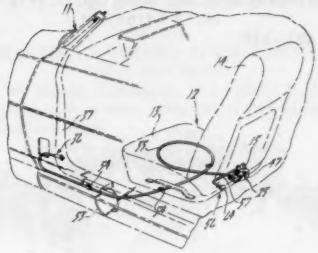
A transport container carrier transverse end framing member including the mounting of a container-engaging latch projectible from and retractible within the member, and an actuating device therefor receivable within the member when the latch is projected to engage the container. Preferably the actuating device includes a force-multiplying mechanism to facilitate manual operation. The member may embody a console structure receiving air, electric or other lines leading from the container to the truck by which the carrier is transported.

3,817,571
AUTOMATIC SEAT BACK LATCH RELEASE

Rudolph M. Horvat, Allen Park, and Alexander Molnar, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 29, 1973, Ser. No. 364,989
Int. Cl. B60n *1/02*
U.S. Cl. 296—65 A **4 Claims**

A vehicle seat latching system for latching a pivoted backrest structure to a seat cushion supporting structure. The latching system comprises a spring-loaded pivoted latch device on the backrest structure engagable with a keeper device carried on the seat cushion supporting structure. A remote control mechanism responsive to movement of a vehicle door into or out of door closed position actuates a latch device displacement means. When the vehicle door is moved to an open position, movement is transmitted from a sensor device through a reciprocable wire element to the latch device

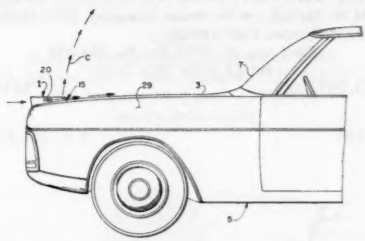


displacement means which drives the latch device out of latching engagement with the keeper device to permit the seat backrest to be forwardly tiltable.

3,817,572
AIR-BORNE PARTICLE DEFLECTOR FOR VEHICLE WINDSHIELDS

George E. Francis, 115 S. Gore, Webster Groves, Mo. 63119

Continuation-in-part of Ser. No. 227,030, Feb. 17, 1972, abandoned. This application Mar. 12, 1973, Ser. No. 340,060
Int. Cl. B60j *1/20*
U.S. Cl. 296—91 **13 Claims**



A deflector for deflecting air-borne particles, such as insects, rain, roadspray and the like clear of the windshield of an automobile. The deflector includes a channel-shaped member with web and side flanges. One end of the channel is closed. The member is mounted inverted on an automobile hood, the side flanges extending longitudinally of the hood and the closed end of the member being at the rear of the hood so as to form in conjunction with the hood an air scoop. The front end of the member is spaced above the hood to form a forward facing inlet opening into which air is rammed as the automobile is driven at highway speeds. A plurality of air outlets are provided in the rear margin of the member extending transversely of the hood for directing air rammed into the scoop in a generally vertical direction, and outlet openings may also be provided in the side flanges for directing air sidewise from the scoop. The air exhausted from the outlets in the back and sides of the scoop forms an air cushion extending transversely of the hood for deflecting air-borne particles clear of the windshield.

3,817,573

CONVERTIBLE AND PILABLE FURNITURE SETS FOR LIVING ROOMS

Guilherme Facury, Av. Jabaquara, 1358/1380, Sao Paulo, Brazil (01000)

Filed Dec. 20, 1972, Ser. No. 316,988
Claims priority, application Brazil, Oct. 27, 1972, 7537
Int. Cl. A47b *85/04*
U.S. Cl. 297—125 7 Claims

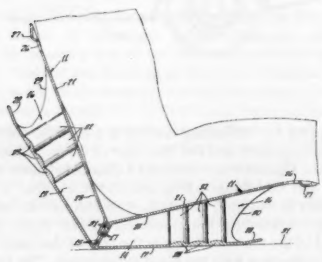
A living room furniture set consisting of a couch, armchairs, banquettes and central console table wherein the couch is modularly corresponding to various associated armchairs having individual seat and back units. The back unit structures are provided with an upholstered surface that is tiltable over its associated seat. The central console table is modularly corresponding to various associated banquettes having reversible cushions. The tiltable elements and the cushions are provided with an upholstered side, for sitting down, and with an overlay face of rigid laminated material for supporting objects in general. The armchairs, the banquettes and the central console table can be easily piled upon the couch, thus providing a compact easily movable block.

3,817,574

PORTABLE CONTAINER AND SEATING DEVICE

Donald W. McNab, c/o W. Braun Company, 6912 Hollywood Blvd., Hollywood, Calif. 90028

Filed Aug. 25, 1972, Ser. No. 283,838
Int. Cl. A47c *7/62, 13/00*
U.S. Cl. 297—188 24 Claims



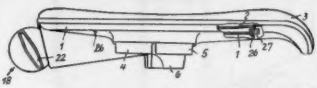
A combined seating and container device including a pair of units positioned in a back-to-back relationship, each including opposing side and end walls and a bottom wall to define an open-topped container, a hinge means interconnecting the units adjacent the bottom walls, while releasable fasteners hold the opposite ends together when the unit is to be transported, allowing the units to be pivoted about the hinge means to an alternate position in which they are at an oblique angle such that one unit serves as a seat and the other as a back.

3,817,575

ROTARY CHAIR

Karl Bocksch, Arolsen, and Willi Hensel, Willingen, both of Germany, assignors to Mouser Kommandtgesellschaft, Cologne, Germany

Filed Jan. 17, 1973, Ser. No. 323,594
Claims priority, application Germany, Jan. 18, 1972, 2202107
Int. Cl. A47c *1/02*
U.S. Cl. 297—347 5 Claims



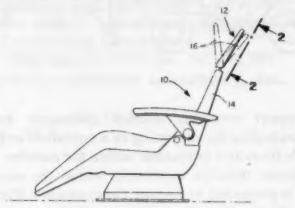
A rotary chair has an upright support column provided with an internally arranged gas spring device controlled by a valve. A seat has a lower supporting shell and an upper shell connected with the lower shell and adapted to be provided with upholstery. In the interior space surrounded by the shell are located transmission linkages one of which operates the valves of the gas spring and the other of which effects tiltable displacement of a backrest unit mounted on the seat. Pushbuttons are accessible at the exterior lower side of the lower shell and are connected with the linkages so as to operate the same when depressed.

3,817,576

DENTAL CHAIR WITH ADJUSTABLE HEADREST

Anthony Ciavattoni, and Thomas J. Schubert, both of Richmond, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 2, 1972, Ser. No. 294,142
Int. Cl. A47c *7/36, 7/42*
U.S. Cl. 297—408 7 Claims



A headrest mounted to the top of a chair backrest can easily be unlocked, grasped, and pivoted forward and backward with respect thereto using only one hand. A pawl mechanism which locks the headrest in any one of numerous predetermined positions throughout its range of travel, has a handle which can be easily depressed to unlock the headrest by inserting the fingers through an access opening in the back of the headrest.

3,817,577

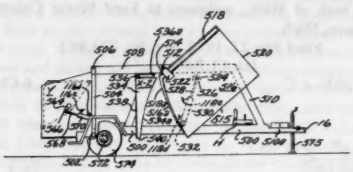
POWER VEHICLE DRAWN CONTAINER TRANSPORTING DEVICE

Charles J. Ellero, 105 Panorama Dr., Bakersfield, Calif. 93305

Continuation-in-part of Ser. No. 254,853, May 19, 1972, which is a division of Ser. No. 94,738, Dec. 3, 1970, Pat. No. 3,666,130. This application Sept. 29, 1972, Ser. No. 293,475
Int. Cl. B62b *1/00*
U.S. Cl. 298—5 2 Claims

A wheel-supported device capable of selectively and removably engaging a desired number of cargo holding con-

tainers for transportation to a desired destination, when the device is pivotally connected to a rear portion of an automotive vehicle such as a truck or tractor. During transportation the containers are supported by engaging forks at elevated positions above the road surface.



In a second embodiment of the invention, the containers are included as an integral part of the device, but are movable by power means from first to second positions whereby the cargo is discharged from the container by force of gravity.

3,817,578

APPARATUS FOR STEERING A LONGWALL MINERAL MINING MACHINE

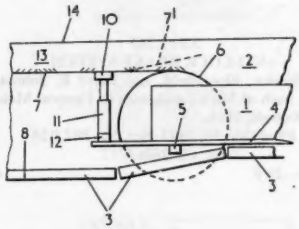
Raymond George Wilson, Tamworth, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Oct. 17, 1972, Ser. No. 298,267

Claims priority, application Great Britain, Nov. 12, 1971, 52691/71

Int. Cl. E21c *27/24*

U.S. Cl. 299—1 **7 Claims**



Steering apparatus for a mineral mining machine having a rotary cutter head includes a probe resiliently urged towards the mine roof so as to sense the position of the cutting horizon with the mineral seam and apparatus for sensing the height of the probe with respect to the cutter head.

3,817,579

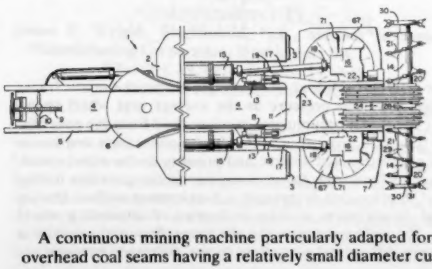
MINING MACHINE

Frank A. Delli-Gatti, Jr., Amity, Pa., assignor to Lee-Norse Company, Charleroi, Pa.

Filed Apr. 14, 1972, Ser. No. 243,973

Int. Cl. B65g *65/06*; **E21c** *35/02*

U.S. Cl. 299—68 **14 Claims**



A continuous mining machine particularly adapted for low overhead coal seams having a relatively small diameter cutterhead of the non-oscillating or fixed head type driven by chains that also cut coal and convey it rearwardly to a gathering head mounted on the front of the machine. The gathering head carries a pair of counter-rotating discs having vanes cooperating with conveyor fences for sweeping and discharging coal to a conventional conveyor mounted on the machine chassis.

3,817,580

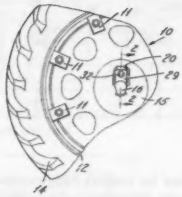
TRACTOR ADJUSTABLE TREAD WHEEL CONSTRUCTION

Raymond W. Wilson, Washington, and Charles E. McKeon, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1972, Ser. No. 303,571

Int. Cl. B60b *37/04*

U.S. Cl. 301—1 **1 Claim**



An adjustable gauge tractor wheel for clamping on an axle has non-circular surfaces for clamping on a non-circular portion of the axle and a wedging construction comprising a gib received within the wheel hub and having a pair of inclined plane surfaces confronting the axle. A pair of wedges extending between the plane surfaces of the gib and the axle are forced into wedging position by a bolt engaging both wedges. Reverse rotation of the bolt retracts the wedges for adjustment of the wheel.

3,817,581

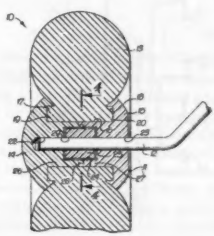
MODEL VEHICLE WHEEL STRUCTURE

Allen B. Maxam, 218 W. Palm, Burbank, Calif. 91502

Filed July 14, 1972, Ser. No. 271,915

Int. Cl. B60b *19/00*

U.S. Cl. 301—6 R **14 Claims**

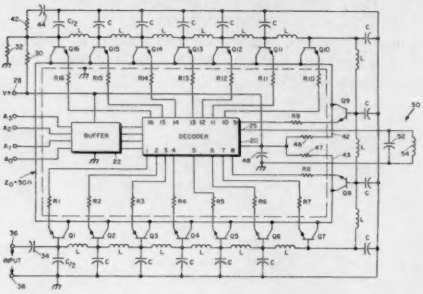


A vehicle wheel structure for toy airplanes and the like in which a hub on which is mounted a solid resilient tire has an axially extending bearing aperture providing a rotatable bearing for a straight axle. Intermediate opposite ends of the bearing aperture is an annular pocket in which is contained a cylindrical block of synthetic plastic resin material having an axial bore in which the axle is snugly received to releasably hold the hub on the axle. A brake housing on the hub has complementary friction braking surfaces and complementary cam means on a stationary hub on the vehicle act to urge the braking surfaces into braking engagement with each other.

3,817,582
DIGITALLY CONTROLLED PHASE SHIFTER

Norman Green; Robert L. McGill, Jr., and William C. Vergara, all of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 9, 1973, Ser. No. 349,135
Int. Cl. H03k 1/12, 5/159
U.S. Cl. 307—262 7 Claims

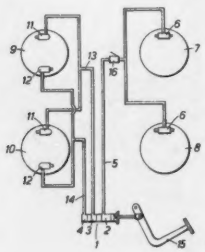


A delay line has its output taps connectable through the base-emitter circuits of individual transistors and then through the output terminals of a standard one-of-sixteen multiplexer or decoder to a load. In response to a four bit digital control signal a selected one of the sixteen multiplexer output terminals is connected to the load while the other multiplexer output terminals have a relatively high voltage impressed thereon thereby back-biasing all transistors except the selected transistor.

3,817,583
HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Roy Blakey, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 15, 1972, Ser. No. 234,709
Claims priority, application Great Britain, Mar. 23, 1971, 7761/71; June 19, 1971, 28844/71
Int. Cl. B60t 13/00
U.S. Cl. 303—6 R 8 Claims

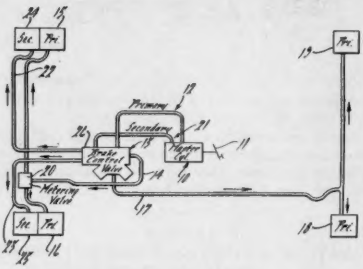


In an hydraulic braking system for a vehicle incorporating brakes on a front pair of wheels and at least one pair of rear wheels on opposite sides of the vehicle, a total of at least three pressure spaces is defined within at least one master cylinder, and at least one brake on each wheel of each pair of wheels is adapted to be actuated by at least one hydraulic actuator. Each pressure space is adapted to supply fluid under pressure to at least one pair of hydraulic actuators for applying a pair of brakes of which the brakes of that pair are each located on a different wheel of a pair of wheels on opposite sides of the vehicle.

3,817,584
BRAKE CONTROL VALVE

John T. Huston, Livonia, and Raymond F. Toohey, Lincoln Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed July 21, 1972, Ser. No. 273,882
Int. Cl. B60t 11/34
U.S. Cl. 303—6 C 6 Claims

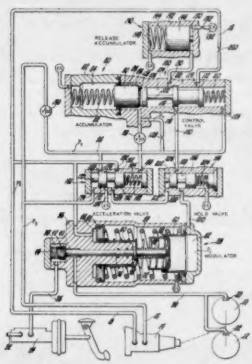


A redundant hydraulic braking system having a pair of differentially calibrated pressure proportioning valves in parallel to secure proportioning in more than one mode of the system; proportioning is selected to occur only after a predetermined degree of linear deceleration (corresponding to a predetermined degree of master cylinder pressure) has been experienced in either mode.

3,817,585
ANTI-LOCK BRAKE SYSTEM

Lauren L. Bowler, Bloomfield, and Laird E. Johnston, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

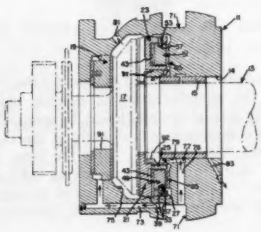
Filed Oct. 30, 1972, Ser. No. 302,024
Int. Cl. B60t 8/12
U.S. Cl. 303—21 F 4 Claims



An extremal anti-lock brake system utilizes automatic transmission governor pressure as the average rear wheel speed input signal. An accumulator receives fluid from the governor at a flow rate proportional to wheel acceleration and stores fluid proportional in volume and pressure to the wheel speed. Return of fluid from the accumulator to the governor during wheel deceleration is through a deceleration orifice. During wheel deceleration at rates indicative of impending wheel lock, the orifice restricts the discharge flow and provides a pressure differential equivalent to the difference between ac-

tual and predetermined maximum wheel velocities during braking under optimum conditions. This pressure differential operates a control valve which exhausts the supporting pressure from a conventional brake pressure modulator to release the brakes. A period of wheel acceleration follows the brake release and during the resulting wheel speed recovery the accumulator is recharged and the control valve shifts to reapply pressure to the modulator. An acceleration valve senses the wheel speed recovery permitted by the brake release and closes a hold valve which isolates the brake pressure modulator from the control valve to maintain the modulator supporting pressure and its then existing magnitude to provide the hold mode of the extremal cycle. When the wheel speed recovery ends the acceleration valve and hold valve are shifted and the support pressure is reapplied to the modulator to initiate the brake apply mode of the extremal cycle.

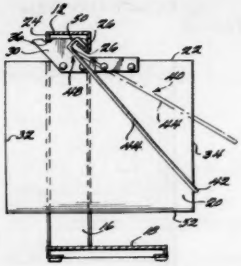
3,817,586
COMPACT TILTING PAD THRUST BEARING
Richard C. Elwell, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jan. 2, 1973, Ser. No. 320,491
Int. Cl. F16c *17/06*
U.S. Cl. 308—160 **5 Claims**



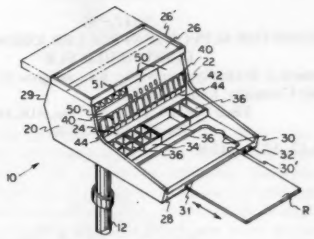
In a machine casing having a rotating shaft supported therein, axial displacement of the shaft is limited by a tilting pad thrust bearing. Prior art thrust bearings of the tilting pad type are usually bulky because all components are contained within a so-called base ring. According to the present invention, the base ring is eliminated by an annular cage that circumferentially retains the bearing pads which are radially supported by the machine casing. Pivotal load equalizing and transferring links are also retained within the annular cage. Load transfer to the machine casing is accomplished through a relatively thin hardened ring between the pivotal links and machine casing. The ring also serves as a spacing member between the thrust bearing and machine casing.

3,817,587
SUSPENSION FILE
James P. Wright, Binghamton, N.Y., assignor to Systems Manufacturing Corporation, Washington, D.C.
Filed Oct. 29, 1971, Ser. No. 193,640
Int. Cl. A47b *63/00*; **B42f** *9/00*
U.S. Cl. 312—184 **1 Claim**

This disclosure embraces a suspension type filing arrangement for folders constructed from flexible sheet material; a horizontally extending supporting rail is provided which is formed with two parallel flanges depending from its front and rear edges respectively; the flange on the rear edge of the rail is curved in the form of a hook when viewed in cross section; the folders are adapted to be vertically suspended from the rail by suspension members which are attached to each of their upper edges so that each folder will extend transversely of the rail; a U-shaped rod is pivotally suspended at its free ends from the flange on the rear edge of the rail so that a horizontally extending portion of the rod will rest on a side edge of each folder suspended from the rail.



3,817,588
DENTAL CONSOLE
Gordon B. Helmers, 132 Fernbrook Cir., Spartanberg, S.C. 29302
Filed Jan. 3, 1972, Ser. No. 214,577
Int. Cl. A47f *5/08*
U.S. Cl. 312—209 **23 Claims**



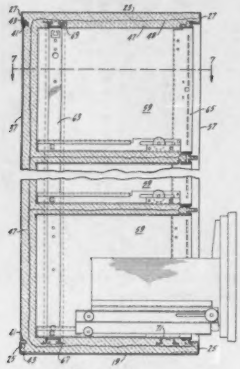
A console is described and claimed herein for use by a dentist and especially an orthodontist. A supportable housing is provided having a bottom, side walls and a top wall. The top wall is movable in a horizontal direction rearwardly of the console so as to expose a compartmentalized storage area underneath and so as to serve as a work surface for an orthodontic technician. A work surface for the orthodontist is provided at the front of the console and has a plurality of compartments in an outer end thereof so as to receive patient records, pencils, elongated instruments and the like. The front of the console is adapted to receive a plurality of modular units with each of the modular units having instrument or supply receiving compartments located therein. The compartments may be provided with identification indicia thereon that matches a like identifying indicia on a particular instrument so as to enable the technician to refer to the instruments by the indicia as opposed to a technical name. Such indicia may be colors, geometric designs, numbers, letters, and the like. The compartments may be adjustable insofar as depth is concerned by the availability of removable stops. Likewise, certain of the compartments may be provided with removable covers so as to provide storage for sterile instruments or supplies, and may be liquid tight to hold a sterilizing solution and gauze or the like therein.

3,817,589

LATERAL FIRE RESISTANT FILE CABINET

Clarence A. F. Anderson, Fruitport, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Nov. 6, 1972, Ser. No. 304,085
Int. Cl. A47b *81/00*; F25d *11/00*
U.S. Cl. 312—214 1 Claim



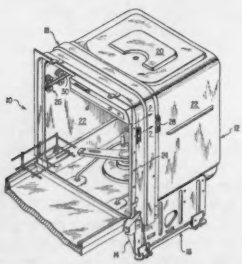
An insulated fire resistant file cabinet of the lateral type in which the width of the cabinet is greater than its depth. The file cabinet is constructed and strengthened so as to maintain its structural integrity in the event it falls due to building collapse during a fire or the like.

3,817,590

MEANS FOR SUPPORTING ROLLER ASSEMBLIES IN A DISHWASHER TUB

Bernard J. Brezosky, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,347
Int. Cl. A47b *88/00*
U.S. Cl. 312—341 R 5 Claims



A unit-handled roller assembly for front loading dishwashers employing a unipartite plastic tub includes a plastic roller mounting stud having an integral annular array of spaced resilient fingers at the tub wall engaging end thereof for maintaining a roller in assembled relationship with the stud prior to installation and serving as an integral washer between the roller and tub wall upon installation.

The roller mounting stud also includes an integral, annular sealing ridge upstanding from the tub wall engaging end of the stud in surrounding relation to a central mounting bore for deforming and/or abrading the softer tub wall into fluid tight sealing engagement with the annular ridge.

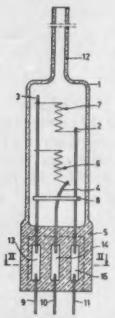
A plurality of the roller mounting assemblies are anchored in a common reinforcing channel member backing a metal collar adjacent the front open end of the dishwasher.

3,817,591

METHOD OF MANUFACTURING A LAMP

Claude Joseph Charles Deiss, Asnieres, France, assignor to Fabriques Reunies de Lampes Electriques, Issy-les-Moulineaux (Hauts de Seine), France

Continuation of Ser. No. 164,961, July 21, 1971, abandoned, which is a continuation of Ser. No. 813,114, April 3, 1969, abandoned. This application Dec. 15, 1972, Ser. No. 315,645
Claims priority, application France, Apr. 11, 1968, 68.147774
Int. Cl. H01j *9/18*
U.S. Cl. 316—19 1 Claim



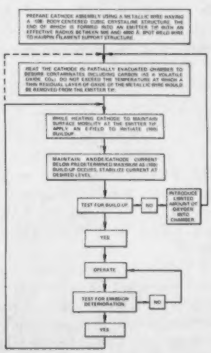
A method of providing a rigid support for the filament structure during the manufacturing of electric lamps with envelopes having at least one pinch seal, by temporarily securing fusible metal connection rods directly to the current lead-in members within the envelope. After the lamp assembly has been sealed, short circuit current having sufficient intensity for melting the connecting rods is passed through the lamp to eliminate the temporary short circuit between the lead-in members.

3,817,592

METHOD FOR REPRODUCIBLY FABRICATING AND USING STABLE THERMAL-FIELD EMISSION CATHODES

Lynwood W. Swanson, McMinnville, Oreg., assignor to Linfield Research Institute, McMinnville, Oreg.

Filed Sept. 29, 1972, Ser. No. 293,322
Int. Cl. H01j *9/02*
U.S. Cl. 316—26 45 Claims



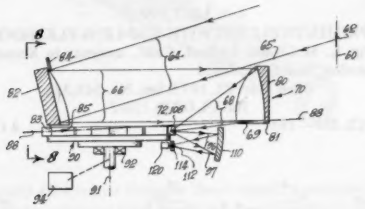
Methods are disclosed for reproducibly fabricating and using <100> thermal-field built-up field emission cathodes

through the selective thermal elimination of contaminants and preservation of specific surface oxides in conjunction with the application of an E-field to promote faceting of certain planes while discouraging faceting of the {100} planes. An example in which <100> oriented tungsten wire is used as a starting material is treated comprehensively.

3,817,593
IMAGE SURFACE SCANNING SYSTEM

Clyde W. Harris; Robert S. Neiswander; Paul S. Sungino, all of Santa Barbara, Calif., assignors to The Te Company, Santa Barbara, Calif.

Filed Nov. 11, 1971, Ser. No. 197,857
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 **20 Claims**

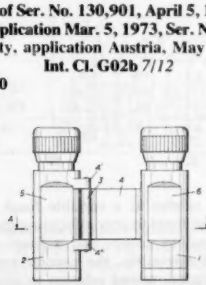


An optical scanning system especially suited for strip mapping utilizes image surface scanning of an arcuate primary image by means of a continuously rotating circular array of roof reflector pairs, with the edge of the dihedral angle of each roof pair spaced from the axis of rotation by one-half the radius of curvature of the primary image. The primary image surface may be either convex or concave toward the incident radiation. A preferred all mirror system employs as primary objective a spherically concave mirror with reflecting Schmidt corrector plate used in a tilted off-axis configuration which permits unobscured use of a semicircular area of the primary mirror. A reflective relay objective comprising a slightly tilted toric surface receives radiation from the scanning roofs and refocuses the image with further corrections at a field stop to energize the sensor or field of sensors. During transition between adjacent scanning roofs unwanted radiation is cut out by intermittent insertion of an optical switch at the primary image surface. Convenient means are described for generating multilevel calibration signals.

3,817,594
FOLDABLE BINOCULAR FIELD GLASSES

Harald Fischer, Tirol, Austria, assignor to Swarovski-Optik K.G., Austria

Continuation of Ser. No. 130,901, April 5, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,299
Claims priority, application Austria, May 4, 1970, 4015/70
Int. Cl. G02b *7/12*
U.S. Cl. 350—70 **7 Claims**

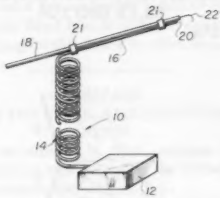


Binocular field glasses are formed of a pair of individual telescopes with one arranged to pivot relative to the other about an asymmetrical joint so that it can be folded from a variable open position into a collapsed or folded position. The joint consists of a short joint arm on one telescope supporting a pin and a considerably longer joint arm secured to and extending from the other telescope and having its outer end secured to the pin, the telescopes have cylindrically shaped housings and each housing has a flattened surface for a portion of its axial length with the flattened surface on one housing forming a recess to receive the longer joint arm secured to the other telescope when the field glasses are arranged in the folded position.

3,817,595
EXTENSIBLE-RETRACTABLE HELICALLY COILED FIBER OPTIC ASSEMBLY

Alfred E. Edelman, Camden, N.J., and Lionel J. LaPlante, South Bridge, Mass., assignors to Vicon Products Corp., Mamaroneck, N.Y.

Division of Ser. No. 35,149, May 6, 1970, abandoned. This application May 15, 1972, Ser. No. 253,644
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **11 Claims**



An extensible-retractable helically coiled fiber optic assembly, similar on configuration to the well known helically coiled telephone wire connecting telephone hand-sets to telephone equipment, is provided. A method of making the extensible-retractable coiled fiber optic assembly is taught in which individual glass fibers drawn down to a maximum diameter of **0.001** inches, and preferably down to **0.0008** inches or less, are clamped at their extremities to form a fiber optic bundle. The fiber optic bundle is disposed in a sheath of elastic material having a plastic memory, such as rubber, polyvinyl chloride, etc. This assembly is then wound about a mandrel and held in the coiled position during heat treatment to cure or set the sheathing material in the helical shape. The entire assembly is then cooled at a rate which will maintain the set and will not deleteriously affect the optical fibers.

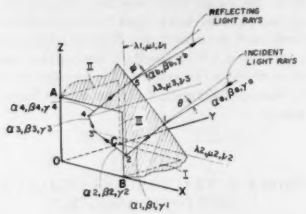
3,817,596
LIGHT REFLECTOR AND METHOD OF DIFFUSING THE REFLECTING LIGHT OF A LIGHT REFLECTOR

Morimasa Tanaka, Kanagawa, Japan, assignor to Ichiko Industries Limited, Tokyo, Japan

Filed June 30, 1972, Ser. No. 268,025
Claims priority, application Japan, July 7, 1971, 46-49606
Int. Cl. G02b *5/12*
U.S. Cl. 350—103 **1 Claim**

A light reflector which diffuses its reflecting light rays received from external light sources such as headlight lamps of vehicles, is disclosed. The reflector comprises a light transmitting reflecting member made of a synthetic resin and having a smooth front surface and a rear face with a number of reflecting elements formed in adjacent relation thereon, each of said reflecting elements being comprised of three reflecting

planar surfaces arranged so that their normal lines deviate by a desired angle from the optical axes X, Y, Z of the element which cross each other at right angle, whereby the light rays



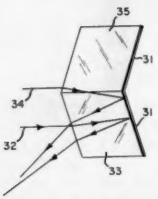
reflected and emitted from these elements are not reflected in a line parallel to the light rays incident to the respective reflecting elements.

3,817,597

LASER SCANNER USING AN INTRACAVITY DEVICE OF A FERROELASTIC MATERIAL TO FORM AN IMAGE

Carl C. Aleksoff, Ann Arbor, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 18, 1973, Ser. No. 352,472
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **7 Claims**



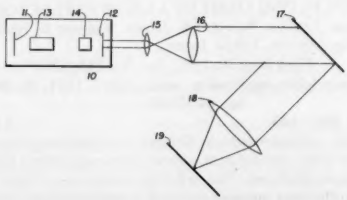
A laser is provided with an intracavity device consisting of a crystal of a material having ferroelastic properties with a single movable domain wall. Light is deflected from the axis of the cavity by the crystal in the region of the domain wall and imaged to an image which can be moved by moving the domain wall.

3,817,598

LASER BEAM DEFLECTION SYSTEM

Henry F. Taylor, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 25, 1972, Ser. No. 292,034
Int. Cl. G02f *1/02*
U.S. Cl. 350—160 R **5 Claims**



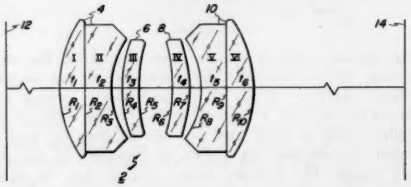
A source of laser energy of determinable, relatively narrow band spectral character, includes means for selectively changing the spectral character of the laser energy, preferably by filtering, so as to produce a desired very narrow-band spectral output. The laser energy is intercepted by means for both expanding it into a beam of desired dimension, and also collimating the beam; dispersing means positioned to receive the collimated beam causes the emerging laser energy to be dispersed at different angular dispositions as a function of the variation in its principal wavelength component. Means for focusing the laser energy at a selected image plane are provided whereby the selective changing of the spectral character of the beam and its principal wavelength component is determinative of the spatial disposition of the laser energy focused at the image plane. Thus, the position of the focused principal wavelength component may be changed to any one of a great number of possible positions by selectively changing the spectral character of the laser energy.

3,817,599

PROJECTION LENS WITH ADD LENS ELEMENTS

George L. McCrobie, Upland, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1973, Ser. No. 343,331
Int. Cl. G02b *15/02*
U.S. Cl. 350—183 **4 Claims**



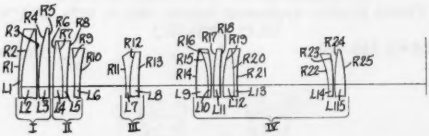
A projection lens for operation between fixed conjugates includes a pair of add lenses for selective combination with the basic lens for changing the magnification of the system. The basic lens operates at unity magnification, with one add lens at 0.74X and with the other add lens at 0.65X magnifications.

3,817,600

ZOOM LENS HAVING CLOSE-UP FOCUSING MODE OF OPERATION

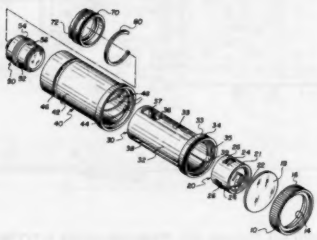
Rinzo Watanabe, Tokyo, Japan, and Ellis I. Betensky, Stamford, Conn., assignors to Ponder & Best, Inc., Los Angeles, Calif.

Filed June 1, 1972, Ser. No. 258,780
Claims priority, application Japan, June 14, 1971, 46-41643
Int. Cl. G02b *15/16*
U.S. Cl. 350—186 **11 Claims**



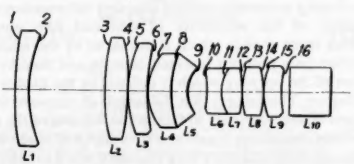
This disclosure relates to a variable focal lens for a still camera having from front to rear a focusing group, a zooming group, a compensating group, and a fixed objective. In a zooming mode of operation, the second and third groups move in a first predetermined relation to vary the effective focal length of the lens system, while in a close focusing mode of operation the second and third groups move in a second predetermined relation for close-up focusing.

3,817,601
ZOOM LENS MOUNT
Victor Vincent Colaiace, and Melville Wallace Miller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 2, 1973, Ser. No. 356,700
Int. Cl. G02b 7/10
U.S. Cl. 350—187 4 Claims



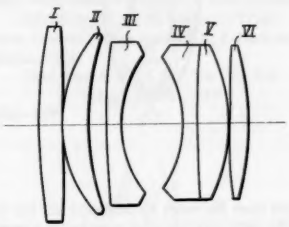
A zoom lens mount includes three nested, concentric barrels with an improved inner barrel for mounting and transporting a component of the lens. The inner barrel comprises a body section having integrally formed resilient members with a cam follower formed on each resilient member. When the three barrels are assembled, each of the resilient members urges its associated follower through a longitudinal slot in a central barrel into a helical cam groove in an outer barrel. Axial movement of the inner barrel is caused by relative rotational movement of the central and outer barrels.

3,817,602
PHOTOGRAPHIC OBJECTIVE PARTICULARLY FOR SUPERMICROFILM
Tomokazu Kazamaki, and Koichi Kobayashi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed July 3, 1972, Ser. No. 268,472
Claims priority, application Japan, July 9, 1971, 46-50884
Int. Cl. G02b 9/64
U.S. Cl. 350—214 2 Claims



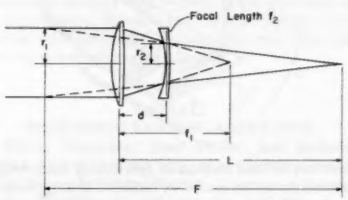
A photographic objective particularly adapted for use during exposure or projection of supermicrofilm. The objective has a viewing angle on the order of ±12° with a relatively large aperture having an F-number of 1.4, the magnification being on the order of 1/100. At the same time the objective has highly favorable aberration conditions and is well-suited to be used with supermicrofilm.

3,817,603
PHOTOGRAPHIC OBJECTIVE HAVING GLASS OF A HIGH INDEX OF REFRACTION
Yasuo Takahashi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 18, 1972, Ser. No. 254,424
Claims priority, application Japan, May 24, 1971, 46-35396
Int. Cl. G02b 9/60
U.S. Cl. 350—218 1 Claim



A photographic objective using glass of a high index of refraction. The objective has a Petzval sum which is not undesirably large and it has a negative radius of curvature at the rear surface of the front lens in order to minimize distortion while compensating for this factor by other features.

3,817,604
METHOD OF FOCUSING A HIGH-POWERED LASER BEAM
Bob E. Watt, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.
Filed Jan. 3, 1973, Ser. No. 320,793
Int. Cl. G02b 9/10
U.S. Cl. 350—232 6 Claims

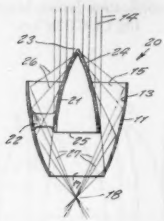


A method of providing a focal spot position independent of the input optical power of a laser beam. A negative lens is interposed such that focal spot motion caused by a changing refractive index in one lens element is canceled by an opposing motion in the negative lens element.

3,817,605
BEHIND MIRROR FOCUS LIGHT GATHERING DEVICE
Chester A. Franklin, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10017
Filed Mar. 12, 1973, Ser. No. 340,096
Int. Cl. G02b 5/10
U.S. Cl. 350—294 2 Claims

A device for converging sunlight beams so to be able to ignite a fire or do solar cooking; the device consisting of a cylinder of frusto-conica, shape which is outwardly arcuate, the cylinder inner surface forming a reflector of the light

beams so that when positioned with its axis parallel to the light beams, and with its wider mouth end toward the sun, the light



rays reflected from the inner surface pass out the rear smaller mouth and the light rays converge together at a point rearward of the small mouth.

3,817,606

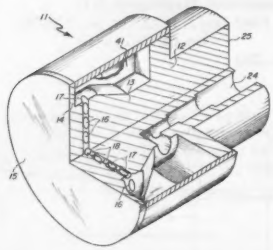
MIRROR FOR HIGH POWER LASERS AND METHOD OF FABRICATING SAME

Edward V. Locke, Rockport, and Richard A. Hells, Andover, both of Mass., assignors to AVCO Everett Research Laboratory, Inc., Everett, Mass.

Filed Jan. 11, 1973, Ser. No. 322,783

Int. Cl. G02b *5/08*

U.S. Cl. 350—310 **5 Claims**



A laser mirror and method of fabricating same resistant to thermal distortions produced by radiative heating and/or heating by other processes associated with high power lasers. A thick metal block is separated into a thin face portion, an intermediate portion and a rear portion by a plurality of coplanar closely spaced intersecting coolant passages provided by drilling intersecting holes preferably at right angles to each other entirely through the block near one end. The intersecting holes form a plurality of spaced connector members or pillars in the intermediate portion integral with the face and rear portions. Coolant means including a manifold surrounding the holes is provided to permit coolant under pressure to be passed through the space defined by the holes.

3,817,607

MAGAZINE LOADED PROJECTOR-PLAYER

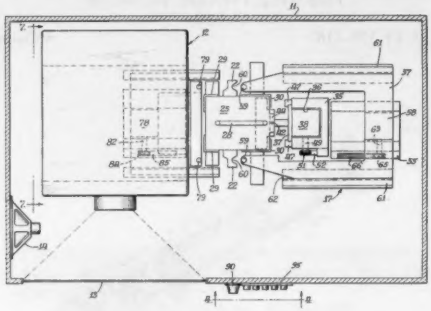
Ray C. Anderson, 3700 15th St., Rock Island, Ill. 61201

Filed Mar. 17, 1972, Ser. No. 235,553

Int. Cl. G03b *23/02*

U.S. Cl. 352—74 **14 Claims**

A unitary projector-player combination intended for use as a complete home entertainment unit and utilizing a cartridge sound film projector and novel injection-ejection mechanism for inserting cartridges into and retracting from the projector. The mechanism employs a rectangular magazine formed with a plurality of cartridge retention slots, a reciprocal slide



mechanism for moving the magazine along a vertical axis, a reciprocal slide mechanism for injecting a cartridge into the projector, and a reciprocal slide mechanism for ejecting a cartridge from the projector and returning it to its slot in the magazine.

3,817,608

MOTION PICTURE CAMERA WITH ADJUSTABLE SHUTTER

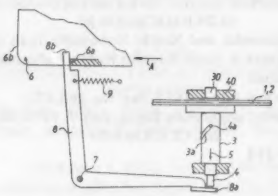
Karl Neudecker, and Anton Theer, both of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 14, 1972, Ser. No. 315,163

Claims priority, application Germany, Dec. 14, 1971, 2161911

Int. Cl. G03b *17/26*

U.S. Cl. 352—78 C **13 Claims**



A motion picture camera for use with film-containing cassettes having externally applied encoded information which is indicative of the sensitivity of confined film employs a scanning lever or slide which is displaced by the encoded information on a properly inserted cassette and thereby adjusts the size of the opening which is defined by the blades of a rotary shutter. This insures that the length of exposure times is a function of the sensitivity of film in the housing of the camera. A cassette containing highly sensitive film will cause the lever or slide to select relatively long exposure times so that the user can make exposures when the scene light is weak without using an electronic flash unit or an analogous source of artificial light. The exposure times will be relatively short when the camera contains film of average sensitivity which can be used in broad daylight whereby the selection of relatively short exposure times reduces the likelihood that the quality of exposures would be affected by camera shake. The camera is provided with an overriding knob which enables the user to adjust the shutter independently of the sensitivity of film in that cassette which is properly installed in the camera body.

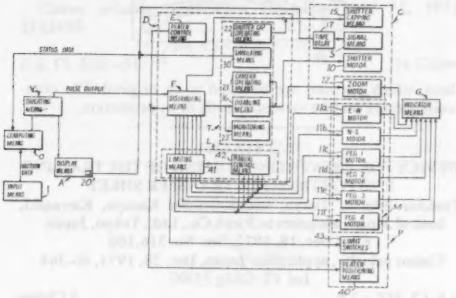
3,817,609
ANIMATION SYSTEM

Charles A. Vaughn, 2665 Regency Dr., East, Tucker, Ga. 30084

Continuation of Ser. No. 83,900, Oct. 26, 1970, Pat. No. 3,690,747. This application Sept. 8, 1972, Ser. No. 287,582The portion of the term of this patent subsequent to Sept. 12, 1989, has been disclaimed.

Int. Cl. G03b *21/32*

U.S. Cl. 352—87 **10 Claims**



An animation system in which a camera means for exposing frames of film to photograph an object and a support means for supporting the object with respect to the camera means are moved relative to each other in accordance with motion data and status data converted by a computing means into a plurality of data outputs to which a motion means for moving the camera means and the support means relative to each other is responsive, each of the plurality of data outputs including a number of electrical pulses indicative of the motion data and occurring in response to status data. The motion data is converted by the computing means so that the numbers of electrical pulses in the data outputs differ selectively to cause that varying motion of the camera means and support means relative to each other which creates the illusion of an object accelerating or decelerating in the frames of film exposed by the camera means.

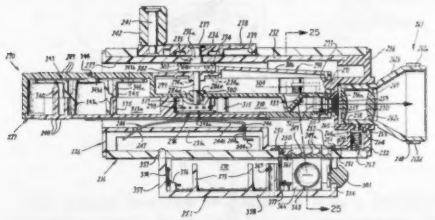
3,817,610
MOTION PICTURE APPARATUS WITH REMOVABLE CARTRIDGE

James R. Skinner, Cupertino; Mark O. Uitz, Mountain View, and Paul W. Hait, Saratoga, all of Calif., assignors to Action Films, Inc., Mountain View, Calif.

Continuation of Ser. No. 78,115, Oct. 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 867,289, Oct. 17, 1969 abandoned. This application Mar. 7, 1973, Ser. No. 338,893

Int. Cl. G03b *21/00*

U.S. Cl. 352—129 **3 Claims**



Motion picture apparatus with removable cartridge having a housing with a cartridge removably mounted in the housing. An aperture is provided in the cartridge. A length of film is disposed within the cartridge and means is provided for advancing the length of film frame by frame past the aperture. Means is mounted in the cartridge and exposed to a source of light for supplying light to the film on the side of the film opposite the aperture. An optical assembly is mounted on the housing in front of the aperture for forming an image of the film as it is advanced in the cartridge.

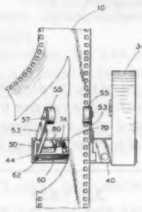
3,817,611
RUN-OUT AND SAFETY SWITCH MECHANISM FOR MOTION PICTURE PROJECTORS

Ilo M. Brown, Omaha, Nebr., assignor to Ballantyne of Omaha, Inc., Omaha, Nebr.

Filed Mar. 9, 1973, Ser. No. 339,546

Int. Cl. G03b *21/18*

U.S. Cl. 352—155 **3 Claims**



A run-out and safety switch mechanism positioned between the lower sprocket and the take-up reel of a motion picture projector including two, spaced-apart sensing arms held by spring tension in sliding engagement with the opposing edges of the film strip. A limit switch positioned between the two sensing arms is actuated whenever the absence of any portion of the film strip being transported permits the spacing between the two sensing arms to decrease below a predetermined limit. The body of the limit switch is mounted on the inside of one of the two sensing arms and is actuated by the approach of the other sensing arm. Retaining buttons at the extremity of each sensing arm hold the film strip in a captured position even during start-up when excessive loop lengths may form between the lower sprocket and the take-up reel.

3,817,612
MICROFILM READING APPARATUS

Albert Maier, Muenchen; Josef Pfeifer, and Kasimir Ambraschka, both of Unterhaching, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 15, 1972, Ser. No. 315,484

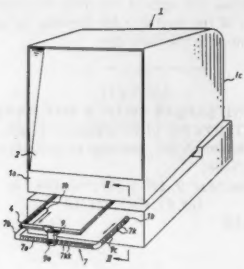
Claims priority, application Germany, Dec. 17, 1971, 2162841; June 29, 1972, 2231774

Int. Cl. G03b *21/10, 23/08*

U.S. Cl. 353—27 **19 Claims**

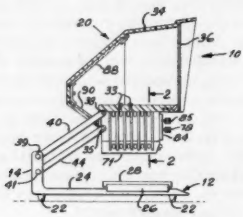
A microfilm reading apparatus wherein the projection lens or lenses are mounted in the housing behind the front wall at a level above one or more microform holders which are movable in horizontal planes to place selected portions of microforms therein into register with the single lens or with one of several lenses. The outwardly extending portions of the holders rest on a supporting device which resembles a U-shaped yoke and has two parallel legs slidably mounted in the housing and one or more webs (one for each holder) which extend between the legs and are parallel to the front wall of the housing. Each holder has a prop which slidably engages the respective web whereby the webs insure that the respective holders maintain their microforms in planes which are normal to the optical axis or axes of the projection lens(es). The legs and/or the web or webs of the supporting device may be provided with graduations to facilitate the placing of

selected portions of microforms into register with the lens or lenses by moving the web or webs with the holder or holders toward or away from the front wall of the housing and/or by moving the holder or holders lengthwise of the respective web



or webs. Those portions of the housing, holder(s), prop(s) and supporting device which move relative to each other may consist of or may be coated with a synthetic plastic material having a low coefficient of friction (such as "Teflon").

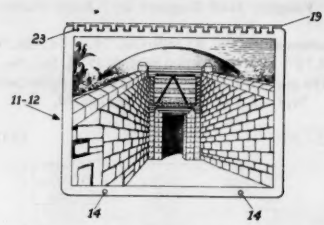
3,817,613
OPTICAL ENLARGING DEVICE
Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563
Filed July 27, 1971, Ser. No. 166,512
Int. Cl. G03b *21/06, 21/10, 21/28*
U.S. Cl. 353—67 **2 Claims**



An optical enlarging device for graphic copy comprises a base member with two copy supporting plates on the base member respectively movable in mutually perpendicular directions in a horizontal plane. A carriage assembly is adjustably supported by the base member over the copy surrporting plates by frame members and a balanced spring. An optical assembly in the carriage projects an upright enlarged correctly oriented readable image on a vertical screen carried by the carriage assembly.

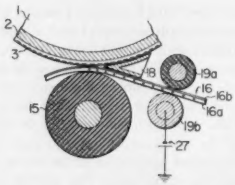
3,817,614
SYSTEM AND PROCESS FOR PICTURING THE ORIGINAL APPEARANCE OF AN ARCHAEOLOGICAL FINDING
Arrigo Equini, Via del Ghirlandaio 39, Rome, Italy
Filed June 6, 1972, Ser. No. 260,098
Claims priority, application Italy, June 9, 1971, 50912/71
Int. Cl. G03b *21/00*
U.S. Cl. 353—121 **6 Claims**

The total original appearance of an archaeological finding may be reconstructed by an assembly of superposable pictures wherein one sheet carries only those portions of the first sheet believed to be original, the remaining portions of the sheet comprising transparent neutral zones. A second sheet carries the reconstructed appearance of those portions missing from the first sheet, corresponding to the neutral zones of the first



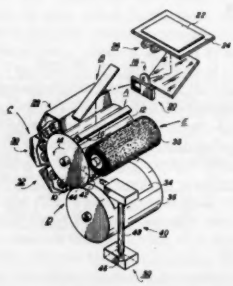
sheet, which portions are believed to be original. The composite picture may be viewed directly or by projection.

3,817,615
DEVICE FOR PREVENTING SOILING OF THE TRAILING END PORTION OF A TRANSFER SHEET
Tsukasa Adachi, Tokyo, and Kazuhiko Kasuya, Kawasaki, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan
Filed Dec. 18, 1972, Ser. No. 316,100
Claims priority, application Japan, Dec. 28, 1971, 46-364
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **6 Claims**



A device for use with electrostatic latent image transfer-printing apparatus to prevent soiling of the trailing end portion of the transfer-printing sheet due to overcharging, which device is disposed in a position to impress a bias voltage of the same charge as the electrostatic latent image on the electrically-conducting material layer underside of the transfer-printing sheet immediately after the latent-image containing dielectric upper layer is stripped from the surface of the image forming member.

3,817,616
THERMAL CHAMBER FOR A DEVELOPABILITY REGULATING APPARATUS
Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 6, 1972, Ser. No. 295,775
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 DD **6 Claims**



An apparatus in which the developability of an elec-

trophotographic printing machine is regulated. Errors induced by temperature fluctuations are minimized by controlling the thermal environment.

3,817,617

PHOTOGRAPHIC COPYING ARRANGEMENT WITH AUTOMATIC DIAPHRAGM CONTROL

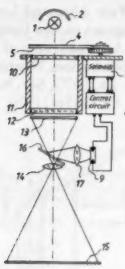
Volker Weinert, Munich, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 19, 1972, Ser. No. 316,556

Claims priority, application Germany, Dec. 22, 1971, 2163688

Int. Cl. G03b *27/76*

U.S. Cl. 355—51 **16 Claims**



A first and second diaphragm blade respectively are coupled to a first and second solenoid. The solenoids are intercoupled by gearing in such a manner that the first solenoid rotates in a direction opposite to the second solenoid. One solenoid is activated for closing the diaphragm, one for opening the diaphragm. The signals activating each solenoid are derived from a differential amplifier which compares a signal furnished by a photosensitive element to a reference signal signifying the desired exposure.

3,817,618

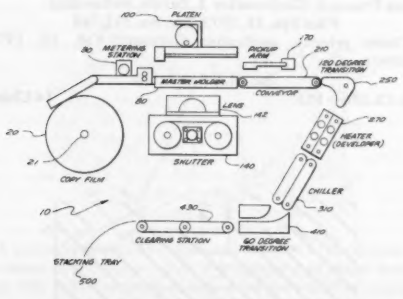
MICROFICHE DUPLICATING MEANS

Robert E. Riley, 1131 Winn Rose St., Jackson, Miss. 39211, and James H. Gabler, 111 E. William David Pky., Metairie, La. 70005

Filed Apr. 30, 1973, Ser. No. 355,591

Int. Cl. G03b *27/30*

U.S. Cl. 355—100 **4 Claims**



The present invention is concerned with a microfiche duplicating device for making vesicular photographic film microfiche copies from a master. The present device provides in combination apparatus for conveying a microfiche master and copy film into an exposure station whereby a vesicular photographic microfiche copy is made of the master; a developer station whereby the image in the vesicular microfiche copy is developed; a film cooling station whereby the vesicular microfiche copy is cooled and decurled; a clearing station for decomposing unused sensitizer in the vesicular microfiche copy; and a copy receiving station.

The present invention is also concerned with a method of making vesicular photographic microfiche copies which are not warped or distorted. The method of the instant invention comprises exposing a master in juxtaposition with vesicular copy film; developing the vesicular copy to produce the image of the master therein; cooling and decurling the vesicular copy; and then clearing the vesicular copy.

3,817,619

DEVICE FOR MEASURING DISTANCE OF AN OBJECT FROM THE FORWARD END PORTION OF AN ENDOSCOPE

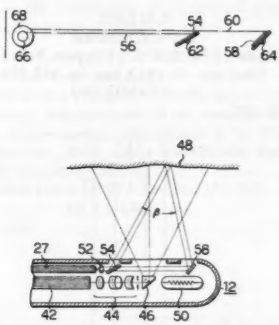
Ichizo Kawahara, Tokyo, Japan, assignor to Olypus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 114,242, Feb. 10, 1971, abandoned, which is a division of Ser. No. 749,809, Aug. 2, 1968, Pat. No. 3,595,200. This application June 2, 1972, Ser. No. 259,203

Claims priority, application Japan, Aug. 8, 1967, 42-50507; Aug. 8, 1967, 42-50508; Aug. 8, 1967, 42-50510; Aug. 29, 1967, 42-73425

Int. Cl. G01c *3/00*; **A61b** *1/06*

U.S. Cl. 356—1 **4 Claims**



The invention disclosed provides a device for measuring the distance of an object from the forward end portion of an endoscope adapted to be inserted into a hollow portion of a living body or the like for the inspection thereof. The forward end portion of the endoscope is connected to a control housing through an elongated tube. The image of an object being viewed is formed in the forward end portion of an objective lens system, and the image is transmitted through the elongated tube by an ocular means provided in the control housing. The distance between the object and the forward end portion of the endoscope is determined using two beams of light emitted from the forward end portion toward the object so as to form a pair of light spots thereon. The distance of the object

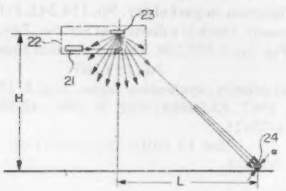
from the forward end portion of the endoscope may be determined by measuring the relative positions of the light spots with respect to the field of view of the endocope. The distance of the object may also be determined by measuring the amount of change in direction of either or both of the beams of light required to bring the two light spots appearing in the field of view into registration.

3,817,620

METHOD OF GEODETIC MEASUREMENT USING DIFFUSION TYPE PULSE LASER

Yasuzi Suzaki, Tokyo; Yuji Yamamoto, and Atsushi Tachibana, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 16, 1972, Ser. No. 297,847
Claims priority, application Japan, Oct. 18, 1971, 46-81615
Int. Cl. G01c *3/00*
U.S. Cl. 356—1 **1 Claim**



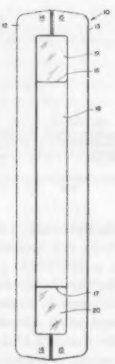
Pulsed laser light is emitted at a certain interval and diffused in space by a pulse laser source installed on a flying object moving relative to the ground. The diffused laser light is received on the ground at a plurality of known points whose coordinates are all known and at, at least, one unknown point whose coordinates are to be determined so that the position of the flying object and the coordinates of the unknown point are determined by detecting the times of emission and reception of the laser pulse.

3,817,621

RANGE FINDER

Charles E. Kester, 6 Fairfield Dr., Fairport, N.Y. 14450

Filed Apr. 19, 1973, Ser. No. 352,524
Int. Cl. G01c *3/12*
U.S. Cl. 356—17 **14 Claims**



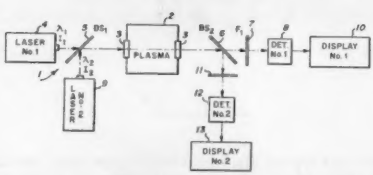
The finder housing contains an eyepiece, and an optical triangulation system in which one of two optical elements is pivotal relative to the other to project two images of a remote object into coincidence at the eyepiece. The adjustable element is carried by a pivotal arm, which is connected by a finely threaded screw to a manually rotatable knob so that several revolutions of the knob are required to swing the arm from one to the other of its limit positions. A measuring tape is connected at opposite ends to the knob and passes around a spaced idler spool for movement by the knob when the latter is rotated to make the images coincide. A graduated surface on the tape is viewable through an opening in the housing to indicate the linear distance of an object from the housing when the images coincide at the eyepiece.

3,817,622

MEASUREMENT OF PLASMA TEMPERATURE AND DENSITY USING RADIATION ABSORPTION

Kenneth W. Billman; Paul D. Rowley, both of Mountain View; James R. Stallcop, Palo Alto, and Leroy L. Presley, Los Altos, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 26, 1972, Ser. No. 318,151
Int. Cl. G01n *21/00, 3/30*
U.S. Cl. 356—73 **7 Claims**



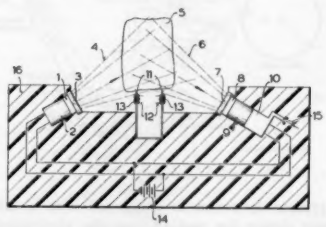
A light beam of predetermined wavelength, preferably monochromatic, is directed through a plasma to be measured. The absorption of the light by the plasma is detected for deriving an absorption coefficient of the plasma. Knowing the absorption coefficient of the plasma and independently measuring either the electron density or temperature of the plasma allows solution of an equation to derive the other unknown quantity, i.e. either electron density or temperature. In a preferred method, the absorption coefficient of the plasma is derived simultaneously for two probing light beams of substantially different predetermined wavelengths. Knowing these two coefficients allows solution of two simultaneous equations to derive the electron density and temperature of the plasma.

3,817,623

APPARATUS FOR MEASURING VISIBILITY IN A FLUID

Frank Fruengel, Glockenacker 2, Zurich, Switzerland

Filed Feb. 15, 1973, Ser. No. 332,748
Claims priority, application Germany, Feb. 25, 1972, 2208904
Int. Cl. G01n *21/26*
U.S. Cl. 356—103 **14 Claims**



A light source has an outlet opening for emitted light and a light detector is spaced from the light source and has an inlet

opening to receive emitted light. The path between these two openings leads through the fluid which is to be measured. A baffle is interposed between the two openings in such a manner that light cannot move from the outlet opening into the inlet opening in a straight path. A pair of omnidirectionally light-diffusing cover plates of light-transmissive material are provided, each overlying and closing one of the openings and having an active surface area which is at most slightly larger than the area of the respective opening.

3,817,624

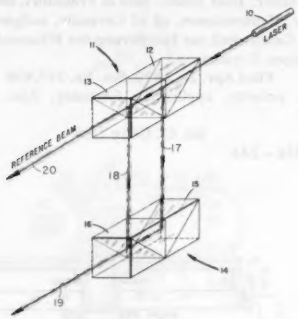
APPARATUS FOR ESTABLISHING A LINE IN THE SAME PLANE AS A REFERENCE LINE

John W. Martin, 700 N. Ivy St., Arlington, Va. 22201

Continuation-in-part of Ser. No. 203,358, Nov. 30, 1971, abandoned. This application Feb. 8, 1973, Ser. No. 330,718

Int. Cl. G01b *11/26*

U.S. Cl. 356—138 **5 Claims**



This disclosure relates to surveying apparatus and, in particular, to the use of a laser beam for producing a subsurface line in the same vertical plane as a reference line so as to establish direction of tunneling.

3,817,625

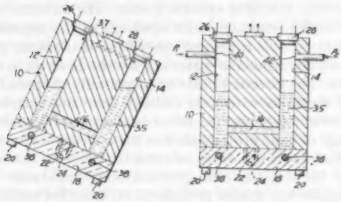
PHOTO ELECTRICAL SENSOR

Richard J. Jordan, Roseville, Mich., assignor to KDI-BAUER Corporation, Warren, Mich.

Filed Oct. 15, 1971, Ser. No. 189,708

Int. Cl. G01b *13/00*; **G01p** *15/02*

U.S. Cl. 356—141 **10 Claims**



A sensor providing an output as a function of the degree of deviation of a condition from a predetermined initial condition. The sensor consists of a housing for a pair of communicating columns of liquid fluid, a light source and means for projecting a beam of light axially through each column of liquid. Electro-optical light detecting means associated with each column of liquid are electrically interconnected so as to provide, as a result of initial calibration, a base reference in the form of an output electrical level corresponding to an initial or equilibrium condition. When the initial or equilibrium condition is disturbed, there results a differential change in the lengths of the columns of liquid causing in turn a differential variation of the amount of light detected by each light detector, thereby providing an excursion of the electrical output level from the base reference which is a function of the differential change in the lengths of the columns of liquid.

3,817,626

OPTICAL ARRANGEMENT FOR COMPARING THE VISUAL CHARACTERISTICS OF SIMILAR OBJECTS

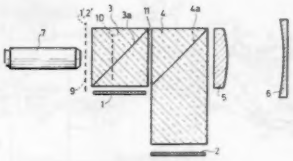
Christian Lietar, Morges, Switzerland, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 13, 1973, Ser. No. 340,819

Claims priority, application Germany, Mar. 14, 1972, 2212159

Int. Cl. G01b *11/00*

U.S. Cl. 356—168 **12 Claims**



An arrangement for comparing the visual characteristics of two similar or substantially identical objects includes a first optical unit arranged for forming from an object located at a predetermined first object location a first image located at a predetermined image location. A second optical unit is arranged for forming from an object located at a predetermined second object location a second image located at a predetermined image location. A third optical unit is arranged for forming said first and second images real and coincident respective third and fourth images. The first and second images may be coincident virtual images. The arrangement is particularly adapted for comparing the configurations of masks used in the fabrication of integrated circuits from wafers of semi-conductor material.

3,817,627

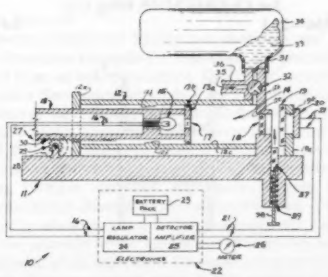
SPECIFIC WAVELENGTH COLORIMETER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Carle C. Brawner, Brea; Larry S. McDavid, and John M. Walsh, Fullerton, all of Calif.

Filed Feb. 13, 1973, Ser. No. 331,760

Int. Cl. G01j *1/42*

U.S. Cl. 356—180 **26 Claims**



A self contained, specific wavelength, single beam colorimeter for direct spectrophotometric measurement of

the concentration of a given solute in a test sample. An electrical circuit employing a photoconductive cell converts the optical output into a linear, directly readable meter output. The colorimeter is simple to operate and is adapted for use in zero gravity conditions. In a specific application, the colorimeter is designed to analyze the concentration of iodine (I_2) in potable water carried aboard a space vehicle such as the IVB stage of Skylab.

3,817,628

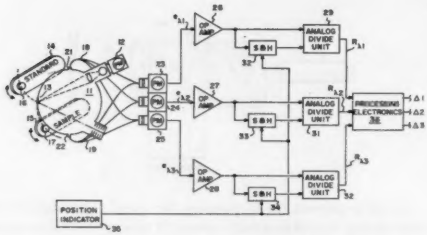
REFLECTOMETER FOR ON-LINE ANALYSIS OF GRANULAR POWDERS

Jim Mills Adams, West Caldwell, N.J., assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Aug. 17, 1972, Ser. No. 281,356

Int. Cl. G01n *21/48*

U.S. Cl. 356—210 **7 Claims**



A method and apparatus for analyzing visible reflectance data of a granular crystalline powder sample in a solid state relative to reflectance data for a reference specimen, by minimizing the effects of the powder particle size on the measurement of the sample optical properties comprising, an optical assembly for deriving sample reference reflectance data, effecting standardization of the sample reflectance data relative to the reference reflectance data by a ratio comparison, and processing the standardized signals effected to establish an output indicator signal representative of the sample optical properties for ascertaining the degrees of presence/absence of the optical quality to be measured.

3,817,629

TUBULAR SAMPLE CELL HAVING RADIALLY EXTENDING FLANGES AT THE ENDS OF THE CELL FOR FLAMELESS ATOMIC ABSORPTION

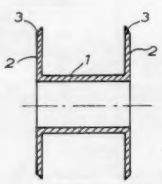
Wolfgang Wilhelm Fritz Witte, Burgbergring 9, Uberlingen, Bodensee, Germany

Filed Apr. 20, 1973, Ser. No. 352,888

Claims priority, application Germany, Apr. 29, 1972, 2221184

Int. Cl. G01n *21/16*; G01j *3/30*

U.S. Cl. 356—244 **24 Claims**



This is a tubular cell for atomizing samples in flameless atomic absorption spectroscopy of the type in which electric current is passed through the tubular cell to generate the heat for vaporizing the sample therein. The improvement comprises the use of radially extending flanges at the ends of the tube which are in both physical and electrical contact with the tube, and the electric current is supplied to the outer rim of the flanges. This construction reduces the tendency of the ends of the tube to be cooler than the center of the tube, since the flanges themselves generate heat and also their relative thinness inhibits large heat losses from the ends of the tube to the relatively massive electrodes which supply the electric current. The flanges may be shaped in various ways and may include cut-out portions to further increase current density therein and to reduce further their heat conductivity.

3,817,630

ARRANGEMENT FOR THE OPTICAL EVALUATION OF SEVERAL SIMULTANEOUSLY OBTAINED SPECIMENS

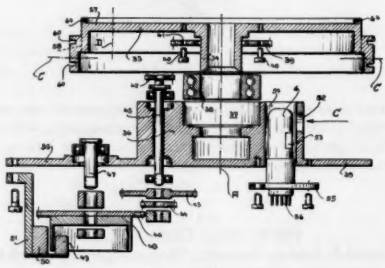
Nikolaus Seiler; Josef Thobe, both of Frankfurt, and Gottfried Werner, Heusenstamm, all of Germany, assignors to Max-Planck Gesellschaft zur Foerderung der Wissenschaften e.V., Goettingen, Germany

Filed Apr. 26, 1972, Ser. No. 247,830

Claims priority, application Germany, Apr. 27, 1971, 2120597

Int. Cl. G01n *1/18*

U.S. Cl. 356—244 **10 Claims**



The apparatus is arranged to collect specimens or components of a mixture that were separated by electrophoresis and includes a plurality of small tubes or cuvettes mounted on a preferably rotatable cuvette holder. The cuvettes are connected to the separate outlet openings of the separating apparatus by flexible tubes and other flexible tubes are provided to convey the measured material from the cuvettes to a collection unit. The cuvette holder has a plurality of spaced wedge-shaped members extending radially from the periphery and the cuvettes are supported between adjacent wedge members. Openings or slots are provided in the cuvette holder between the top and bottom of the cuvettes for the light beam to pass through the cuvettes onto photodetector apparatus. The cuvette holder has spaced peripheral recesses for resilient ring-like securing members that maintain the cuvettes on the cuvette holder. The cuvette holder is arranged to be positioned with the cuvettes in the path of a light beam of photometric apparatus and the cuvette holder is arranged to rotate about a fixed axis through a preselected arc so that the cuvettes are successively subjected to the light beam and optically evaluated by measuring the absorbency of the component passing through the cuvette. The cuvette holder may have the wedge-shaped members arranged radially or at various angles to the axis of the rotary cuvette holder.

3,817,631
DEVICE FOR MEASURING DISTANCE OF OBJECTS FROM THE FORWARD END PORTION OF AN ENDOSCOPE

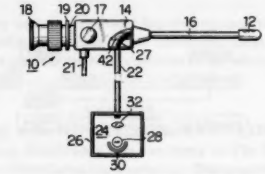
Ichizo Kawahara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

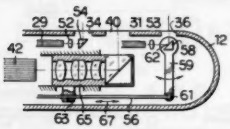
Continuation-in-part of Ser. No. 114,239, Feb. 10, 1971, abandoned, which is a division of Ser. No. 749,809, Aug. 2, 1968, Pat. No. 3,595,200. This application June 2, 1972, Ser. No. 259,202

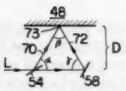
Claims priority, application Japan, Aug. 8, 1967, 42-50508; Aug. 29, 1967, 42-73425; Aug. 8, 1967, 42-50507; Aug. 8, 1967, 42-50510

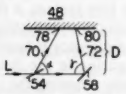
Int. Cl. G01c *5/00;* **A61b** *61/06*

U.S. Cl. 356—1 **5 Claims**









The invention disclosed provides a distance measuring device for measuring the distance of an object from the forward end portion of an endoscope adapted to be inserted into a hollow portion of a living body or the like for the inspection thereof. The forward end portion of the present device is connected to a control housing through an elongated tube. The image of an object received in the forward end portion by an objective lens system is transmitted through the elongated tube and viewed through an ocular means provided in the control housing. The distance between the object and the forward end portion of the endoscope is determined by using a pair of light beams having parallel rays emitted from the forward end portion of the endoscope toward the object so as to form light spots thereon.

The distance of the object from the forward end portion of the endoscope is determined by measuring the relative positions of the light spots with respect to the field of view of the endoscope. The direction of either one or both of the light beams are adjustable by a control mechanism in the control housing, with the amount of adjustment being indicative of the direction of the light beam. The distance between the object and the forward end portion is determined by bringing light spots appearing in the field of view into registration with each other.

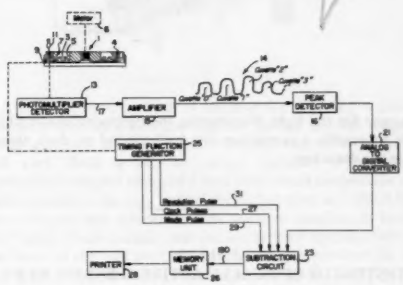
3,817,632
DIGITAL SUBTRACTION CIRCUIT FOR A CENTRIFUGAL CHEMICAL ANALYZER OF THE ROTATING SPECTROPHOTOMETER TYPE

Thomas Picunko, Bronxville, and Marvin C. Stewart, Hempstead, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 21, 1972, Ser. No. 291,050

Int. Cl. G01n *33/16*

U.S. Cl. 356—39 **1 Claim**



Known rotating spectrophotometers have a series of cuvets arranged concentrically around a horizontally rotatable disc so that when the disc is rotated, centrifugal force mixes and transfers reagents and samples to the cuvets. As each cuvet passes a light source, the absorbance of each individual sample is detected and measured photometrically, and is converted to an electrical signal pulse.

A digital subtraction circuit is provided for use with a centrifugal chemical analyzer of the rotating spectrophotometer type wherein the light absorbance value of a reference cuvette of the analyzer is subtracted from the light absorbance values of each of the other cuvettes of the analyzer.

3,817,633
SPECTRORADIOMETRIC APPARATUS AND METHOD FOR MEASURING RADIATION

John U. White, 80 Lincoln Ave., Darien, Conn. 06902

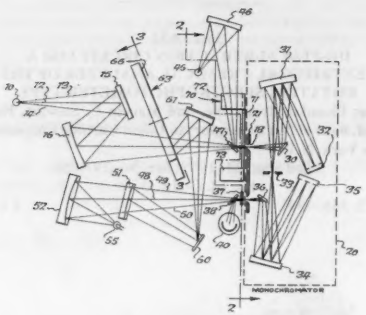
Filed Aug. 2, 1972, Ser. No. 277,390

Int. Cl. G01j *3/42*

U.S. Cl. 356—97 **29 Claims**

A spectroradiometer having two detectors and a pair of monochromator channels for measuring the intensity of light emitted from an unknown source. One of the monochromator channels is illuminated with light from a reference source, and a fraction of the resulting monochromatic beam is received by the first detector to produce a reference signal. Another fraction of the monochromatic beam is combined with light from the unknown source by directing the two to opposite sides of a rotating chopper and then alternately through the other monochromator channel to the second detector. The second detector produces successive signals respectively corresponding to the intensity of the light from the unknown source and the intensity of the light from the reference source. The ratio between these signals is multiplicatively combined in an electrical circuit with the reference signal from the first detector, thus providing a measurement of the unknown intensity. In

cases in which conventional detectors are employed, certain preferred embodiments of the invention include an additional



chopper for the light illuminating the monochromator channels to enable a correction for background or dark signals from the detectors.

3,817,634

TESTING OF OPTICALLY ACTIVE SUBSTANCES BY POLARIZED RADIATION

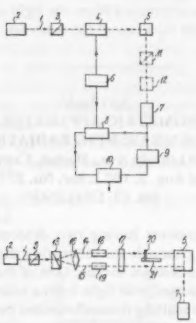
Laurence David Barron, and Amyand David Buckingham, both of Cambridge, England, assignors to National Research Development Corporation, London, England

Filed Feb. 29, 1972, Ser. No. 230,406

Claims priority, application Great Britain, Mar. 10, 1971, 6454/71

Int. Cl. G01j *3/44*

U.S. Cl. 356—114 **21 Claims**



In testing a sample of an optically active substance, the sample is irradiated with polarized electromagnetic radiation and the intensity of radiation scattered from the sample in a given direction is detected. The state of polarization of the incident radiation from which the detected radiation is derived is modulated, preferably by alternating it between right and left circular polarization, to cause a periodic variation of the detected intensity, and a signal related to this variation is derived.

3,817,635

DEVICE FOR MEASURING THE ACTUAL DIMENSION OF AN OBJECT AT THE FORWARD END PORTION OF AN ENDOSCOPE

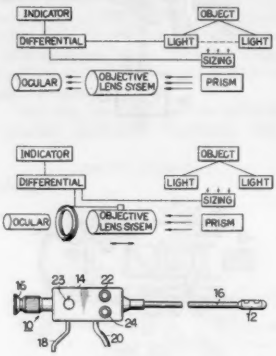
Ichizo Kawahara, Tokyo, Japan, assignor to Olumpus Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 114,240, Feb. 10, 1971, abandoned, which is a division of Ser. No. 749,809, Aug. 2, 1968, Pat. No. 3,595,200. This application Aug. 7, 1972, Ser. No. 278,453

Claims priority, application Japan, Aug. 8, 1967, 42-50507; Aug. 8, 1967, 42-50508; Aug. 8, 1967, 42-50510; Aug. 29, 1967, 42-73425

Int. Cl. A61b *1/06;* **G01b** *11/02;* **G01c** *3/24*

U.S. Cl. 356—171 **6 Claims**



The invention disclosed provides a device for measuring the actual dimension of an object in the field of view of an endoscope, the forward end portion of which is adapted to be inserted into a hollow portion of a living body or the like for the inspection thereof. The endoscope is provided with a fixed focal length objective lens system, a differential mechanism, and a sizing means along with adjusting means for the objective lens system, and a distance measuring means. The actual size of an object appearing in the field of view is measured directly by differentially coupling the differential mechanism with the sizing means and either the adjusting means for the objective lens system, or the distance measuring means for measuring the size of the object appearing in the field of view. An indicating means coupled with the differential mechanism indicates directly the actual dimension of the object regardless of the variation in the distance between the object and the forward end portion of the endoscope.

3,817,636

COSMETIC CONTAINER

Hermann Ritzenhoff, Marburg, Germany, assignor to Gebruder Seidel KG, Marburg, Germany

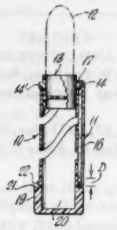
Filed Sept. 7, 1972, Ser. No. 287,081

Int. Cl. A45d *40/06*

U.S. Cl. 401—78 **10 Claims**

The invention contemplates a propel-repel swivel lipstick or the like container utilizing two relatively rotatable tubular members with cam formations which coact with follower structure on an internally guided carrier. The inner rotatable member is selected and formed for radially complaint deformation, being initially constructed in its unstressed state with an oversize radial dimension which will assure interference with the effective bore diameter of the outer tubular member.

Upon assembly of the parts, the inner member is radially inwardly deformed and by its compliant nature provides con-



tinuous radially outward resilient loading against the bore of the outer member, thus assuring a controlled degree of friction, to retain a given actuated condition of the container.

3,817,637

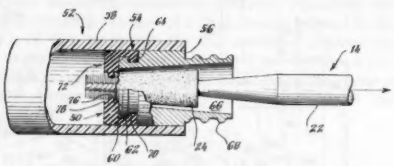
PORTAL SEAL AND WIPER FOR PRODUCT CONTAINER

Martin M. Vasas, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

Filed Apr. 30, 1973, Ser. No. 355,878

Int. Cl. A45d *36/19*

U.S. Cl. 401—122 **12 Claims**



A diaphragm is structured with distinct annular portions and each portion is configured to present particular flexure characteristics along the operational axis of a product container. Dimensional parameters are applied to each portion in adapting the flexure characteristics thereof to provide either a sealing action and/or a wiping action against a product applicator. The diaphragm can be incorporated integrally on a sealing gland of a reservoir assembly which functions cooperatively with the applicator to create the product container. Within the reservoir assembly the sealing gland is interlocked on a portal bushing to simplify the construction, while achieving a peripheral seal of predetermined parameters about the portal bushing.

3,817,638

FOUNTAIN PEN PROBE

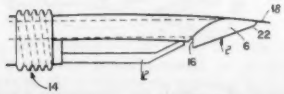
Alan Dawn, Hampshire, England, assignor to E. S. Perry Limited, Gosport, Hampshire, England

Filed May 19, 1971, Ser. No. 144,971

Claims priority, application Great Britain, Dec. 21, 1970, 60560/70

Int. Cl. B43k *5/16*

U.S. Cl. 401—239 **5 Claims**



In a fountain pen, a readily removable probe is located in the feed bar of the pen and includes longitudinally extending air and ink channels therein, the probe supporting the nib of the pen.

3,817,639

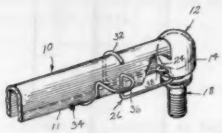
LOCKING DEVICE FOR SECURING A PIVOTAL MEMBER TO ONE END OF AN ARM MEMBER

Arthur L. Good, Elkhart, Ind., assignor to Reese Products, Inc., Elkhart, Ind.

Filed May 15, 1973, Ser. No. 360,606

Int. Cl. B25j *3/38;* **F16b** *7/00;* **F16c** *11/06*

U.S. Cl. 403—122 **4 Claims**



A locking device which is utilized for securing a pivotal member, such as a ball part, to one end of an arm member which can have a socket part connected thereto to receive a ball part. Such a locking device includes a removable generally U-shaped elongated lock part which cooperates with a slot formed in the side wall of the socket part and which flexibly contacts and interlocks with the arm member to form a protrusion which extends into the socket part opening beneath the head of the ball part, thereby serving to prevent the ball part from being separated from the socket part.

3,817,640

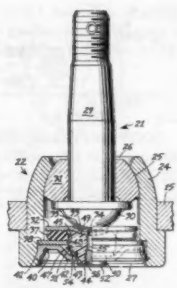
BALL JOINT GAUGE

Warren E. Carter, and Hubert D. Songer, both of Murfreesboro, Tenn., assignors to Perfect Equipment Corp., Murfreesboro, Tenn.

Filed Dec. 4, 1972, Ser. No. 312,181

Int. Cl. F16c *11/06*

U.S. Cl. 403—138 **8 Claims**



A gauge for ball joints employed in the steering linkages and suspension systems of motor vehicles, including a gauge member bearing against the pressure or bearing plate seating the spherical-shaped head of the stud within the housing of the ball joint. A cover member, fixed in the open end of the housing opposite the socket member, is provided with a reference surface registrable with the axial movement of the gauge member to indicate the wear of the spherical head against the socket member. A first annular elastic member is compressed between the pressure plate and the cover member, while a second annular elastic member is compressed between the body portion of the gauge member and the cover member.

3,817,641

BUILDERS SCAFFOLDING

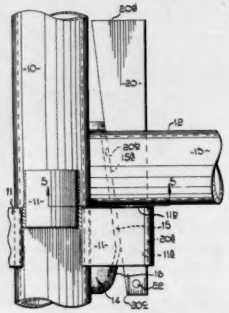
Raymond Ernest Steele, Kenilworth, and Austin John Smith, Sutton Coldfield, both of England, assignors to Kwikform Limited, Birmingham, England

Filed May 25, 1972, Ser. No. 256,991

Claims priority, application Great Britain, May 28, 1971, 18089/71; Apr. 18, 1972, 17985/72

Int. Cl. E04g 7/00; F16b 7/00

U.S. Cl. 403—256 9 Claims



For builders' scaffolding, a transom element having at one or both ends a dependent spigot, secured within a socket on an upright scaffold member by a wedge, working within slots formed in upper and lower wall portions at the end of the transom element.

3,817,642

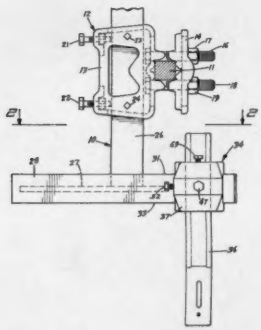
CONNECTOR

Fred W. Eisenhardt, Fargo, N. Dak., assignor to Alloway Manufacturing, Inc., Fargo, N. Dak.

Filed Jan. 29, 1973, Ser. No. 327,739

Int. Cl. A01b 15/02, 23/00

U.S. Cl. 403—385 11 Claims



A tool holder having an upright standard and converging side arms connected to a horizontal plate. A clamp holds the standard on a tool bar. A pair of identical connectors mounted on the side arms carry brackets adapted to support earth working tools, as knives or discs. The connector has an upright passageway for the bracket. Transverse and longitudinal clamping bolts hold the bracket on the connector. One side of the connector has a longitudinal horizontal dovetail groove accommodating an arm. The groove extends at an angle to the longitudinal plane of the passageway. A clamping bolt holds the connector in fixed relation on the arm. The connector is reversible on either arm and is used to change the angular relationship between the arm and bracket.

3,817,643

ROADWAY BASE AND COMPOSITION THEREFOR

David Azar, and Keith P. Lanneau, both of Baton Rouge, La., assignors to Roadway International Corporation, Baton Rouge, La.

Filed Nov. 17, 1971, Ser. No. 199,758

Int. Cl. E01c 7/36

U.S. Cl. 404—76 3 Claims

A method for making a dirt road base, which method comprises loosening the ground to a depth of at least about two inches, mixing the loosened earth with an aqueous dispersion of asphalt containing dispersed calcium hydroxide, to provide it with moisture and asphalt contents that give it the desired strength after compacting, and then rolling the mixed product to form the desired base.

3,817,644

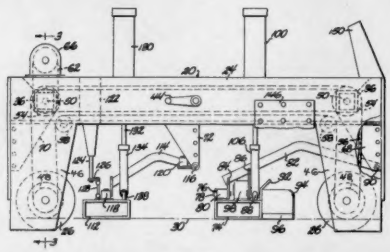
MACHINE FOR VIBRATING, LEVELING AND SCREEDING CONCRETE IN A FORM

Carl G. Matson, 401 E. Central Blvd., Kewanee, Ill. 61443

Filed Aug. 2, 1972, Ser. No. 277,379

Int. Cl. E01c 19/48

U.S. Cl. 404—114 7 Claims



A self-propelled, automated machine for operating over a form to which concrete is introduced, the main functions of the machine being to level, vibrate and screed the concrete to provide a concrete slab without voids, and especially a slab in which both upper and lower surfaces, as well as opposite side edges and other sectional configurations are finished.

3,817,645

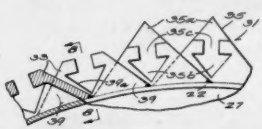
REPLACEABLE EDGE FOR COMPACTION CLEAT

Maurice J. Trainor, Milwaukee, and Charles F. Riddle, Brookfield, both of Wis., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Oct. 20, 1972, Ser. No. 299,601

Int. Cl. E01c 19/26

U.S. Cl. 404—121 1 Claim



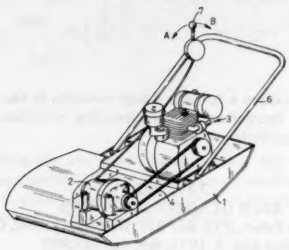
The wheel of a vehicle for compacting a sanitary land fill site is provided with a series of cleats for both traction and destruction of the material over which the wheel and the vehicle transverses. The cleats are individually welded to the cylin-

drical periphery of the wheel in a suitable manner and are subject to extreme wear. Each cleat is provided with a replaceable separate section which includes the outer cutting edge of the cleat such that the section may be inverted to present a second relatively sharp wearing edge.

3,817,646
VIBRATION GENERATOR

Rudolph G. Opderbeck, New Berlin, Wis., assignor to Wacker Corporation, Milwaukee, Wis.

Filed Apr. 30, 1973, Ser. No. 355,580
Int. Cl. E01c *19/34*
U.S. Cl. 404—133 **2 Claims**

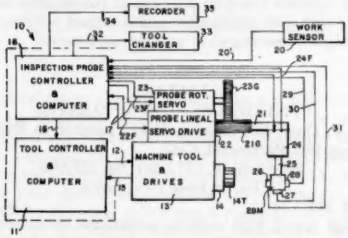


Vibratory thrust is generated by a rotating crankshaft and controlled orbital movement of a single weight pivoted to the crankpin of the crankshaft. As the crankshaft rotates the center of gravity of the weight moves back and forth on a vector through the crankshaft axis. The direction of the vector is adjustable within a substantial angular range about the crankshaft axis.

3,817,647
TOOL CONTROL ARRANGEMENT

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 775,433, Nov. 13, 1968, Pat. No. 3,605,909, which is a continuation-in-part of Ser. No. 518,616, Jan. 4, 1966, Pat. No. 3,476,481, which is a continuation-in-part of Ser. No. 250,942, Jan. 11, 1963, Pat. No. 3,226,833, which is a continuation-in-part of Ser. No. 477,467, Dec. 24, 1954, abandoned. This application Sept. 21, 1971, Ser. No. 182,501
Int. Cl. B23b *39/08*
U.S. Cl. 408—8 **8 Claims**



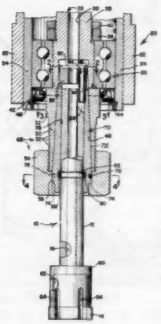
An apparatus and method are provided for controlling a machine tool to perform predetermined or programmed operations on a work piece wherein the tool may be subject to variations in its dimensions due to wear or may be variably located with respect to the tool holder depending on how it is mounted.

The apparatus provided herein is operable to sense and measure or indicate the location of the end of the tool or cutting edge with respect to the work and, in certain intances, the diameter of the tool to determine the degree it is worn. In a particular form of the invention, a single probe is automatically controlled to indicate the location of the tool end and to measure or indicate its diameter. The same measuring device may also be utilized to detect a broken tool and prevent operation of the machine until the tool is replaced. In a further form, the detection means may be operable to initiate an action which results in the replacement of a broken or substantially worn tool by directly replacing same before the next operation is effected or by controlling a turret to indicate a second tool with respect to the work while the worn or broken tool is retracted away from the work.

3,817,648
DRILL SHANK AND CHUCK ASSEMBLY FOR A DRILL PRESS

Harold C. Miller, Chicago, Ill., assignor to Super-Cut, Inc., Chicago, Ill.

Division of Ser. No. 177,774, Sept. 3, 1971, Pat. No. 3,753,622. This application Nov. 9, 1972, Ser. No. 305,163
Int. Cl. B33b *27/12*; **B23b** *31/08*
U.S. Cl. 408—59 **1 Claim**

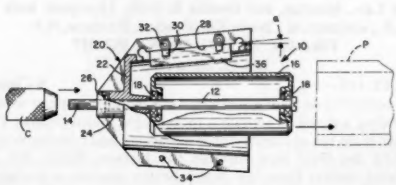


A drill shank and chuck assembly adapted for use in a drill press or the like and embodying an adapter collet which, by a detent action, enables drill substitution to be effected without drill press adjustment.

3,817,649
PIPE SCARFING TOOL

Jonas Medney, 3504 Woodward St., Oceanside, N.Y. 11770

Filed Dec. 13, 1972, Ser. No. 314,700
Int. Cl. B23b *5/16*
U.S. Cl. 408—211 **10 Claims**



In a pipe scarfing tool, a rotatable housing is provided in which a plurality of cutting blades are included. The cutting blades are generally radially oriented and extend longitudinally at an angle with respect to the rotational axis of the

housing. The cutting blades are readily removable and replaceable and are provided with four longitudinal edges each of which is a cutting edge.

The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,817,650

MACHINE TOOL FOR MACHINING A WORK PIECE

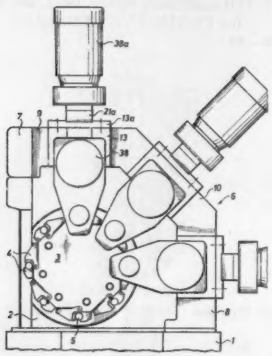
Peter Reich, Wendlingen; Werner Sonnek, Reichenbach, and Wolfgang Von Zeppelin, Kirchheim, all of Germany, assignors to Traub GmbH, Reichenbach (Fils), Germany

Filed July 7, 1972, Ser. No. 269,860

Claims priority, application Germany, Aug. 12, 1971, 2140457

Int. Cl. B23b *3/00*

U.S. Cl. 408—234 **7 Claims**



A machine tool for machining a work piece comprising a stand, a headstock mounted on the stand, a face plate mounted on the headstock for rotation about a face plate axis, a support for a work unit, which support extends over an arc of about 90° and is arranged parallel to the major plane of the face plate and supported at one end on said stand, a bridge extending at an angle to the plane of the support between the other end of the support and the headstock.

3,817,651

CONTROL SYSTEM HAVING MEANS FOR EXPANDING THE USEFUL FREQUENCY RESPONSE

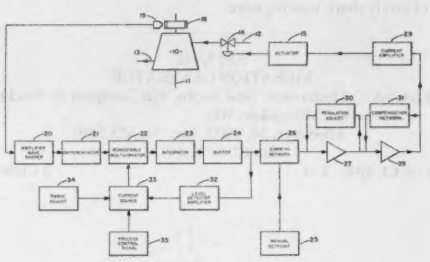
John Law, Manlius, and Donald E. Neill, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,057

Int. Cl. F01d *1/00*

U.S. Cl. 415—1 **9 Claims**

A control system for a steam turbine includes a speed sensor providing a signal to actuate a monostable multivibrator. The output from the multivibrator is integrated and conditioned to control the fluid flow through the turbine. When the integrated output from the multivibrator reaches a predetermined magnitude, a feedback signal is provided to vary the current passing to the multivibrator in a manner which reduces the duration of the output pulses therefrom, so that the useful input frequency response of the multivibrator is expanded. Two means of establishing the turbine speed are disclosed wherein a manual setpoint signal is summed with a function of the control signal output from the multivibrator to provide an error signal, and a process control signal may additionally be employed to vary the current supplied to the multivibrator to produce a corresponding variation in the output pulse duration thereof and a corresponding variation in the error signal magnitude.



3,817,652

HIGH HEAD SOLIDS PUMPS

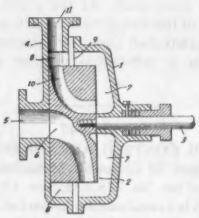
Ronald George Fuller, P.O. Box 337, Hudson, Quebec, Canada

Filed Aug. 2, 1971, Ser. No. 167,957

Claims priority, application Canada, Aug. 12, 1970, 90638

Int. Cl. F04d *29/26, 17/08*

U.S. Cl. 415—53 **4 Claims**



A multi-stage centrifugal pump capable of passing solids utilising pairs of radially arranged continuous unrestricted volute passages through the impeller such that one passage of each pair of passages communicates directly between the inlet eye of the impeller communicating with the inlet in the pump casing and a sub-chamber formed by the impeller and the pump casing, the other passage of each pair communicates directly between a second inlet eye in the impeller communicating with said subchamber and a second subchamber in the casing in communication with the pump outlet.

3,817,653

CENTRIFUGAL PUMP APPARATUS

Hasan F. Onal, Los Angeles, Calif., assignor to Hydro Jet Pumps, Inc., Paramount, Calif.

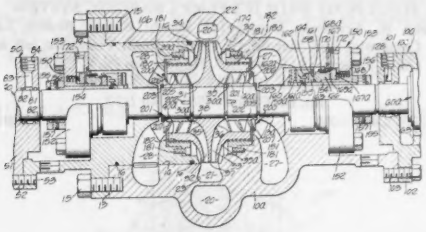
Filed Feb. 10, 1972, Ser. No. 225,096

Int. Cl. F04d *1/04, 13/04*

U.S. Cl. 415—74 **24 Claims**

A high speed, high capacity centrifugal pump apparatus having a radially split pump case, a pump shaft extending axially within the pump case and adapted for high speed rotation therein, and an enclosed impeller with Francis type vanes on each side thereof mounted to said pump shaft for rotation therewith within said pump case. The pump case is provided with a divided inlet flow passage for communicating liquid from a suction line to the center eye portion of the impeller on each side thereof and an outlet flow passage with two volutes

extending about the periphery of the impeller for receiving the discharge of liquid therefrom and communicating this liquid to a discharge line. An induc[illegible] element operably connected to the pump shaft adjacent each side of the impeller moves the



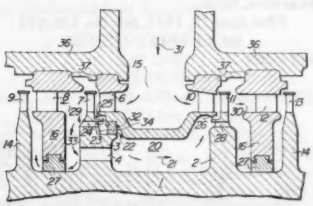
liquid from the inlet flow passage toward the vanes at each center eye portion thereby maintaining a positive pressure on the vanes during high speed operation of the pump to reduce the problems associated with cavitation.

3,817,654

TURBINE ROTOR COOLING MECHANISM

Akio Sohma, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1973, Ser. No. 354,466
Claims priority, application Japan, Apr. 26, 1972, 47-41327
Int. Cl. F01d *3/02*
U.S. Cl. 415—103 **6 Claims**



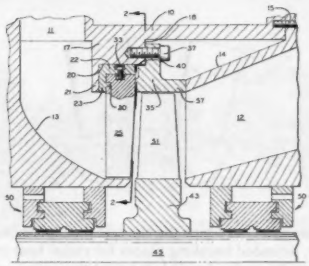
A turbine rotor cooling mechanism of a doubleflow type multi-stage axial-flow turbine for cooling a rotor portion between first stage wheel discs, which is subjected to the hottest gas, with relatively cool gas. The pressure in the first stage outlet on one side of the rotor portion is designed to be slightly different from that on the other side, between the first stage wheel discs a first stage nozzle ring is positioned to define an annular space surrounding the rotor portion and in the discs, holes connecting the outlet sides thereof into the annular space are formed respectively, whereby the low-temperature gas leaving the first stage on the side, on which the pressure in the outlet of the first stage is higher than that on the other side, flows through the holes formed in the disc of the side into the annular space surrounding the rotor portion and then flows out through the holes formed in the other disc so as to cool the highest temperature portion between the first stages.

3,817,655

STATOR BLADE MOUNTING STRUCTURE FOR TURBOMACHINES

Eugene L. Huesgen, Jeannette, and Carl H. Geary, Greensburg, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 22, 1972, Ser. No. 308,882
Int. Cl. F01d *1/02*
U.S. Cl. 415—217 **4 Claims**



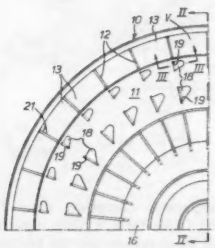
The internal surface of the casing of a turbomachine is formed with an internal circular rib machined with a circular bore terminating at an inwardly extending radial flange. The root portions of a circular series of stator blades are assembled in a blade mounting ring. The blades are restrained against axial and radial movement in the ring. The mounting ring, with the blades preassembled therein, is positioned in the casing bore and is fixed therein as by an annular member which is bolted to the casing in clamping engagement with the roots of the blades and serving to clamp the assembly in the casing.

3,817,656

BLADE-WHEELS

Armand Batteux, Paris, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Oct. 6, 1972, Ser. No. 295,461
Claims priority, application France, Oct. 12, 1971, 71.36559
Int. Cl. F01d *5/22*; **F04d** *29/38*; **B64c** *11/00*
U.S. Cl. 416—180 **9 Claims**



A blade-wheel for a hydrodynamic coupling such as a coupler, torque converter or the like, of the kind comprising at least one annular surface carrying a plurality of blades serving in pairs to form channels, in which the fixing of said blades to said annular surfaces is improved and completed by covering the blades and surfaces with a non-metallic coating which may be a resin, an epoxide resin, a varnish, an adhesive, a synthetic or plastic material. This coating effectively binds the blades to the angular surface or surfaces on which they are fixed and reduced leakage and frictional losses in the working fluid.

3,817,657

INTEGRAL TURBINE WHEEL WITH AXIAL THROUGH-OPENINGS AT THE OUTER RIM AND WITH CONTROLLED RIM CRACKS

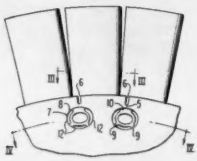
Alfred Hueber, Munich, Germany, assignor to Motoren-Und Turbinen-Union, Munich, Germany

Filed Nov. 8, 1972, Ser. No. 304,660

Claims priority, application Germany, Nov. 8, 1971, 2155344

Int. Cl. F01d 5/08

U.S. Cl. 416—244 25 Claims



A turbine wheel in which the rim and the blades are made in one piece; intended breaking places for radial heat cracks are provided at the ends of radial slots and through-openings are provided which extend through the rim portions of the turbine wheel substantially in the axial direction and thereby prevent the continuation of the heat cracks in a radially inward direction; the through-openings interconnect the high pressure side and the low pressure side of the turbine wheel while the intended breaking places are located between the slots and the through-openings.

3,817,658

FLUID CONTROL APPARATUS

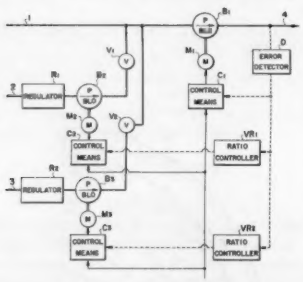
Sigeru Murase, Tokyo, Japan, assignor to Tokyo Netsushori Kogyo Kabushiki Kaisha, Yokohama-shi, Japan

Filed Mar. 20, 1972, Ser. No. 236,374

Claims priority, application Japan, Mar. 22, 1971, 46-16310; July 10, 1971, 46-51354

Int. Cl. F04b 41/06; G05d 11/035

U.S. Cl. 417—2 7 Claims



Fluid control apparatus comprises main fluid pumping means for receiving fluids from a basic input system and at least one additional input system and for feeding the fluids in mixture to an output system, auxiliary fluid pumping means associated with the additional input system, first control means is provided for detecting a deviation between the pressure prevailing in the output system and a setpoint pressure to thereby control the number of revolutions of the main pumping means in order to keep the output pressure thereof constant, second control means being provided for varying the number of revolutions of the auxiliary fluid pumping means, as a function of the number of revolutions of the main pumping means, to provide fluid flow rates which for a given number of revolutions of the main fluid pumping means will provide a constant pressure at the output system. By virtue of this control the fluid in the basic input system and that in the additional input system may be admixed in predetermined proportions while maintaining the mixture at a constant output pressure.

3,817,659

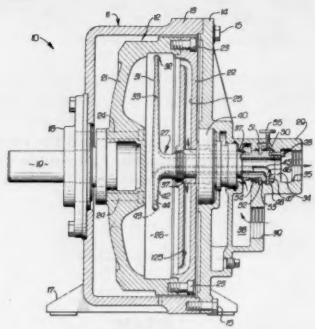
PITOT PUMP WITH JET PUMP CHARGING SYSTEM

John W. Erickson, Huntington Beach; Barton Brown, La Crescenta, and Harold L. Petrie, South Pasadena, all of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Mar. 19, 1973, Ser. No. 342,594

Int. Cl. F04b 25/08; F04d 1/12

U.S. Cl. 417—84 4 Claims



A pitot pump having means built into the pump for reducing the net positive suction head otherwise required for such a pump, and increasing the pump discharge for a given such suction head.

3,817,660

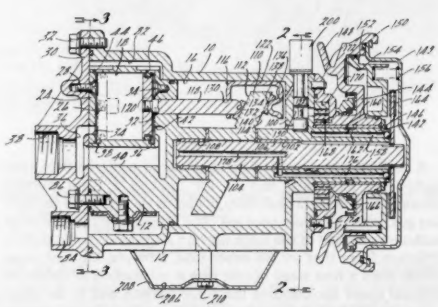
AIR CONDITIONER COMPRESSOR

James Knowles, Bloomfield Hills, and Thomas R. Stockton, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 25, 1971, Ser. No. 156,674

Int. Cl. F04b 1/12, 35/02

U.S. Cl. 417—269 2 Claims



A compressor for pressurizing refrigerants in an air conditioner system comprising double-acting pistons mounted for reciprocation in a common cylinder housing in angularly-spaced disposition with respect to a driving torque input shaft, a swash plate assembly connecting drivably said torque input shaft and the pistons whereby rotary motion of the shaft is translated into reciprocating motion of the pistons as radial

loads on the assembly are transferred to the assembly, a fluid pressure operated clutch for connecting a disc pulley to the torque input shaft, a positive displacement pump driven by the torque input shaft and a valve for distributing pressure from the pump to the clutch.

3,817,661

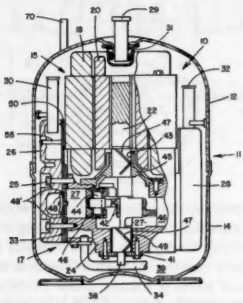
CYLINDER HEAD FOR A MOTOR COMPRESSOR UNIT

Douglas J. Ingalls, and Richard S. Abell, both of Cazenovia, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 96,824, Feb. 10, 1970, abandoned. This application June 1, 1972, Ser. No. 258,644

Int. Cl. F04b *39/12*

U.S. Cl. 417—312 **6 Claims**



A cylinder head for a motor-compressor unit comprising a casting defining an inner cavity which has upper and lower sections separated by a transverse baffle member. An orifice in the transverse baffle member communicates the upper section with the lower section. The lower section is separated into an outer portion and an inner portion by a second baffle member having a transverse portion, a longitudinal portion and an arcuate portion of about 270° connecting the transverse and longitudinal portions. The outer portion of the lower cavity is provided with alternate relatively restricted and relatively expanded areas for attenuating the sound produced by the pulsating flow of the suction gas. The inner portion receives gas discharged from the cylinder.

3,817,662

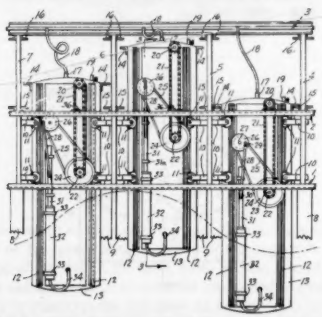
WAVE MOTOR

Stephen Sterk, 3822 Apalachee Pkwy., Tallahassee, Fla. 32301

Filed Jan. 3, 1973, Ser. No. 320,830

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—333 **10 Claims**



A wave motor having at least one vertically and slideably supported air tank to be positioned in the ocean for floating up and down due to waves passing thereby and operating an air compressor with the compressed air therefrom being used as a source of energy.

3,817,663

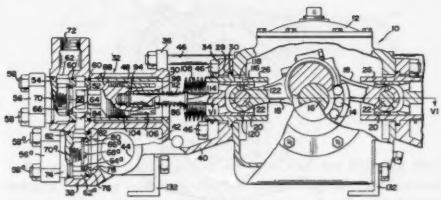
RECIPROCATING PUMP

William H. Zehner, Ashland, Ohio, assignor to Tecno Products Company, Mansfield, Ohio

No Drawing. Filed Nov. 15, 1971, Ser. No. 198,667

Int. Cl. F01b *31/10;* **F04b** *21/02*

U.S. Cl. 417—569 **3 Claims**



A reciprocating pump for liquids and adapted to quick conversion to double its pumping capacity with the addition of extra pumping cylinders. A rotary crankshaft operates through crossheads to drive pistons in the pumping cylinders, and a piston rod rigidly, but releasably, connects each piston and crosshead. Flexible bellows seal between each crosshead guide and piston rod to prevent loss of oil from the case around the piston rod to prevent any of the liquid pumped or outside dirt from reaching the case. The bellows also aid in the circulation of oil from the case to and around each crosshead and associated parts.

3,817,664

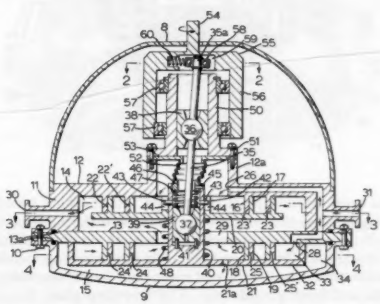
ROTARY FLUID PUMP OR MOTOR WITH INTERMESHED SPIRAL WALLS

James Stewart Bennett, 149 Arnold Ave. Thornhill, and Edwin Alexander Hatfield, Brampton, Ontario, both of Canada, assignors to said Bennett, by said Hatfield

Filed Dec. 11, 1972, Ser. No. 314,250

Int. Cl. F01c *1/02;* **F03c** *3/00;* **F04c** *1/02*

U.S. Cl. 418—55 **25 Claims**



A fluid pump has two sets of spiral pumping units operating in parallel, one pumping spirally outward and the other spirally inward. Each unit consists of a pair of spiral walls intermeshed between end walls which are pressed towards each other by outlet fluid pressure to obtain good sealing action. The intermeshed spiral walls engage each other along lines of contact which advance spirally, being driven by a rotary drive which, in response to dynamic pumping forces, causes the

spiral walls to maintain contact despite wear. The fluid pump can act as a motor when fluid under pressure is forced through the spiral units.

3,817,665

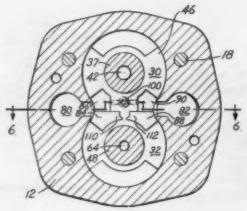
HYDRAULIC PUMP OR MOTOR

Bruce B. Myers, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Apr. 20, 1973, Ser. No. 352,938

Int. Cl. F04c *1/04*

U.S. Cl. 418—189 **10 Claims**



A hydraulic pump or motor of the gear type in which the area between the gears in which the teeth intermesh is connected by a passage in the port plate with the intake and outlet passages of the pump or motor, and a valve directs the flow of fluid entrapped between the teeth of the intermeshing gears preferably to the high pressure side of the pump or motor. The passages containing the valve prevent any appreciable leakage of fluid from the high pressure side to the low side, thus increasing the efficiency of the pump or motor while at the same time preventing any excessive build up of pressure by fluid entrapped between the intermeshing gears.

3,817,666

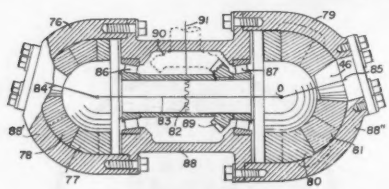
ROTARY POSITIVE DISPLACEMENT UNIT

Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y. 14620

Filed Feb. 12, 1973, Ser. No. 331,781

Int. Cl. F01c *1/08*; **F03c** *3/00*; **F04c** *17/04*

U.S. Cl. 418—195 **9 Claims**



The units contain pairs of toothed intermeshing members running on axes that intersect at an angle differing from 180° by half the tooth-height angle. Their tooth numbers differ by one. Ducts lead fluid to and from the intermeshing members. In units containing two of said pairs their larger members are coaxial and form a rigid rotor. The invention gears this rotor directly to the outside, without driving through the smaller member of one pair. It thereby minimizes the load transmitted through the tooth sides of each pair.

The shaft geared to said rotor is positioned to minimize the bearing loads thereof. Generally the shaft axis lies in an axial plane of said rotor inclined to the plane of the axes of each of said pairs. The improvement further resides in the mounting of the smaller member of a pair and in the shape of the duct openings at the intermeshing members.

3,817,667

ROTARY-PISTON MACHINE

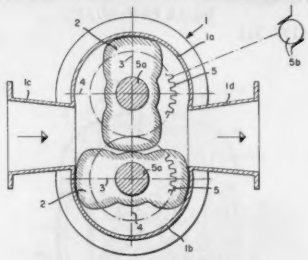
Claus Winkelstrater, Elberfeld; Horst Burgener, Wuppertal, and Christoph Hubrich, Neubeckum, all of Germany, assignors to Gebr. Winkelstrater GmbH, Wuppertal-Barmen, Germany

Filed Feb. 22, 1972, Ser. No. 228,251

Claims priority, application Germany, Feb. 24, 1971, 2108714

Int. Cl. F01c *1/18*

U.S. Cl. 418—206 **1 Claim**



A rotary-piston machine has a housing receiving a pair of geometrically identical impellers each having a pair of identical lobes extending from a hub. Each impeller is symmetrical about a first plane passing through its rotation axis and bisecting its lobes and about a second plane perpendicular to the first plane at the rotation axis. Each lobe is formed with an outwardly circularly convex end surface defining an outer circle and the hub is formed with a pair of outwardly circularly convex lateral surfaces defining an inner circle concentric with the outer circle. Each lobe further has a pair of lateral intermediate surfaces which blend into the lateral surfaces through first transition surfaces and with the end surfaces through second transition surfaces. The intermediate surfaces are straight and parallel to the longitudinal axis of the impeller. The second transition surfaces are circularly arcuate and centered on an intermediate circle equidistant between and concentric with the inner and outer circles.

3,817,668

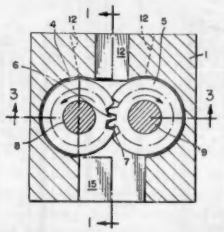
GEAR WHEEL PUMP WITH FEED PASSAGE OF CONSTANT HYDRAULIC CROSS SECTION

Karl Mayer, Elberfelder Str. 159, Radevormwald, and Werner Branscheid, Ringstr. 5, Remscheid-Lennep, both of Germany

Continuation-in-part of Ser. No. 40,279, May 25, 1970, abandoned. This application June 29, 1972, Ser. No. 267,692

Int. Cl. F01c *1/18*; **F03c** *3/00*; **F04c** *1/08*

U.S. Cl. 418—206 **3 Claims**



Gear wheel pumps, in particular melt pumps for vessels at subatmospheric pressure, whose pump casing consists of three plates stacked tightly against one another, the middle plate

having two contiguous, partially overlapping housing intermeshing gear wheels, one gear wheel being driven. The middle plate contains a feed passage of constant hydraulic cross section and a discharge passage for the liquid to be pumped via pipes or tubes connected therewith.

3,817,669

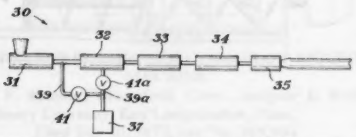
APPARATUS FOR THE PREPARATION OF PLASTIC FOAM

Morgan D. Buckner, Magnolia, Ark., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 173,130, Aug. 19, 1971, Pat. No. 3,751,377. This application Feb. 20, 1973, Ser. No. 334,060

Int. Cl. B29d 27/02

U.S. Cl. 425—4 C 4 Claims



Thermoplastic foam is prepared by extrusion and injection of a fluid blowing agent into the heat plasified mass. The improvement is the inclusion of an interfacial surface generator; that is, motionless in-line mixer, whose mixing, under conditions of stream-line flow, can be considered independent of throughput. Foams of reduced density and increased homogeneity are obtained. Lower power is required, together with simplified equipment and reduced maintenance thereof.

3,817,670

PRESS FOR TIRE SHAPING AND VULCANIZING

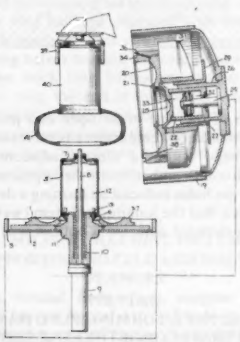
Jean R. Leblond, Compiegne, France, assignor to Uniroyal Societe Anonyme, Neuilly S/Seine, France

Division of Ser. No. 180,591, Sept. 15, 1971. This application Apr. 16, 1973, Ser. No. 351,748

Claims priority, application France, Sept. 21, 1970, 70.34111

Int. Cl. B29h 5/02, 5/08

U.S. Cl. 425—46 5 Claims



Improvements in a tire shaping and vulcanizing press to enable use of the press with tread molding segments avoiding distortion of the tire. A movable mold section is applied to the tire with sufficient force to position the movable mold section coaxially in place on the tire prior to complete closure of the mold. Compressible stops restrain the travel of the movable mold section to maintain space for movement of the tread molding segments until complete closure of the mold.

3,817,671

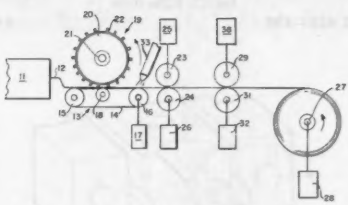
APPARATUS FOR FORMING SHEET MATERIAL

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 68,724, Sept. 1, 1970, Pat. No. 3,708,253, and a continuation-in-part of Ser. No. 736,081, June 11, 1968, Pat. No. 3,526,020. This application Aug. 2, 1972, Ser. No. 277,403

Int. Cl. B29c 17/02

U.S. Cl. 425—66 8 Claims



An apparatus and method are provided for forming sheet material having openings therein extending for substantially the entire length of the sheet. In one form, the sheet is formed of plastic and, while in a heat softened condition, openings are provided therein by the insertion of tooling into the sheet at spaced apart intervals which tooling displaces material of the sheet to form cavities or holes therein. In a particular form, the sheet is predeterminately expanded to form enlarged openings either while the tooling is retained within the sheet or thereafter while the sheet is in an expandable condition. The sheet may be post formed by suitable dies or rollers after it has been expanded to control or predetermine its shape.

3,817,672

SPINNING APPARATUS WITH VAPOROUS HEATING JACKET

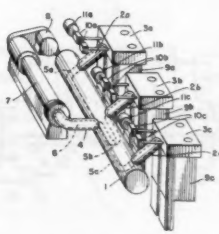
Erich Lenk, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Apr. 20, 1972, Ser. No. 245,981

Claims priority, application Germany, Dec. 27, 1971, 2120600

Int. Cl. D01d 1/06

U.S. Cl. 425—73 8 Claims



Apparatus for the spinning of threads, filaments, bands, ribbons or the like from molten thermoplastic polymers including at least one screw extruder or pump means, a melt distributor conduit system connected thereto to receive and transport the polymer melt, and a series of spinning heads with each head being in fluid connection with the extruder or pump means through an individual conduit of the distributor system. The melt-conducting conduits of the melt distributor system and the spinning heads are encased or lined by a common vapor generator for heating with diphenyl vapor or the like, this generator having a connected vapor distributor and condensate collecting conduit system extending from the screw to the common vapor generator and also from the generator to each spinning head to heat the same.

3,817,673

INJECTION DIE-CASTING MECHANISM FOR SHEATHING A CONNECTION POINT

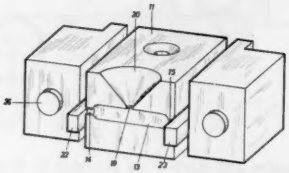
Theo Van de Sandt, deceased, late of Grenzstrasse 9, 429 Bucholt-Biemenhorst, Germany (by Ingeburg Van de Sandt, heir)

Filed Dec. 15, 1972, Ser. No. 315,349

Claims priority, application Germany, Dec. 24, 1971, 2164446

Int. Cl. B29c 6/04

U.S. Cl. 425—108 4 Claims



An injection die-casting mechanism for sheathing a connection point. e.g., between orientation thread and heddle in the case of Jacquard machines, whereby the sheathing takes the form of an extended piece of plastic applied by means of an injection cylinder which can be raised and lowered and by means of a subjacent matrix consisting of two half molds as well as a kinematic connection between the injection cylinder and the matrix.

3,817,674

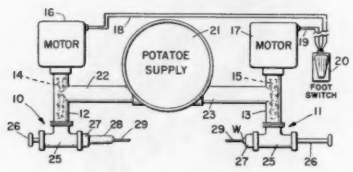
FOOD EXTRUDING AND SPREADING APPARATUS FOR COATING FOOD PRODUCTS

James Hubert Paige, Tustin, Calif., assignor to Logic Display Corp., Orange, Calif.

Filed Sept. 11, 1972, Ser. No. 287,743

Int. Cl. A23l 1/00; B29f 3/10

U.S. Cl. 425—113 2 Claims



Apparatus for making an edible unit is structured so that a covering of mouldable food product can be extruded through an annular die orifice and onto an elongated firm food item being progressively urged through the die orifice by a reciprocal pusher rod. The mouldable food product may be potatoe meal and the firm food item may be a weiner so that the resulting edible unit is a weiner wrapped in a blanket of potatoe that may thereafter be cooked.

The pusher rod thrusts a weiner through a tubular guide while traveling between its retracted and extended positions as the weiner is being covered by potatoe meal. The die assembly can be quickly removed from the apparatus for cleaning or replacement purposes and the annular die orifice can be varied to correspondingly vary the thickness of the potatoe meal.

3,817,675

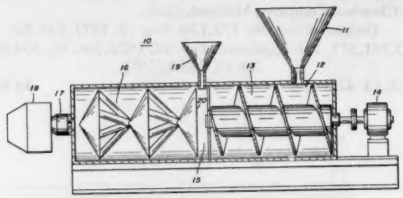
APPARATUS FOR DISPENSING COLORANT IN PLASTICIZED THERMOPLASTIC MATERIAL

Humbert Luciano Maiocco, Woodlyn, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed June 15, 1972, Ser. No. 263,259

Int. Cl. B29f 3/02

U.S. Cl. 425—207 5 Claims



An improved thermoplastic article forming apparatus is detailed in which an interfacial surface generator mixing means is coupled to the plasticizing means to provide a resultant thermoplastic mix which has the desired degree of homogeneity.

3,817,676

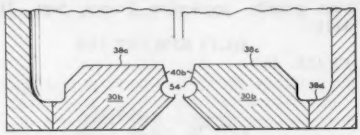
BEAD SEAL FOR ORIENTED ARTICLES

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 4, 1972, Ser. No. 250,293

Int. Cl. B29d 23/03

U.S. Cl. 425—387 B 12 Claims



The strength of the seal of an open end parison preform fabricated at orientation temperature is increased by forming a dependent bead within a closely adjacent longitudinal recess. In an alternate embodiment the appearance of seals is improved, and pin holes reduced by forming a dependent bead in a manner such that the longitudinal stem (web) connecting the bead flares outward adjacent a bottom wall of the article being molded.

3,817,677

METAL NECK FORMING PLUG HAVING POLYTETRAFLUOROETHYLENE SHOULDER

Charles L. Seefluth, Bartlesville, Okla., assignor to Philips Petroleum Company, Bartlesville, Okla.

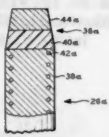
Filed July 31, 1972, Ser. No. 276,678

Int. Cl. B29c 17/00

U.S. Cl. 425—393 9 Claims

In an apparatus for stretching a parison preform at orientation temperature and thereafter expanding same out into conformity with a neck forming means, a plug is provided for moving axially into said parison said plug having a first metal

section of reduced diameter and a second metal section adjacent to said first having a larger diameter, said first and



second sections being connected by a sloping shoulder section made of polytetrafluoroethylene.

3,817,678

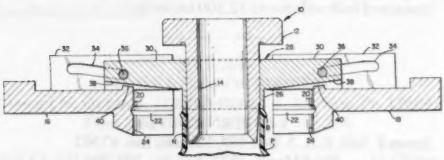
EJECTOR FOR PLASTIC INJECTION BLOW MOLDING MACHINE

Donald F. Armour, Bloomfield, Conn., assignor to Package Machinery Company, East Longmeadow, Mass.

Filed July 10, 1972, Ser. No. 269,964

Int. Cl. B29c *7/00*

U.S. Cl. 425—438 **3 Claims**



An ejector for a plastic injection blow molding machine which comprises a sleeve slidable on the base portion of the parison pin or core pin associated with such machine. The sleeve has a pair of oppositely extending wings, each of which is associated with one half of the two-piece neck ring which is also associated with such machine. Each such wing and its associated neck ring half are provided with cooperating cam means which is operable upon closing and opening movement of the neck ring halves to slide the ejector sleeve on the core pin. When the neck ring halves are closed to define the complete neck ring, the end of the ejector sleeve defines the edge of the plastic parison formed on the pin. When the neck ring halves are separated after the parison has been blown to final shape and size, the sleeve is moved to strip the finally shaped product from the core pin.

3,817,679

INJECTION MOLDING MACHINE INCLUDING A FIXED PLATEN SUPPORTING NOZZLE ASSEMBLY MOUNTING FLANGES

Edwin Ruegg, Netstal, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG, Nafels, Switzerland

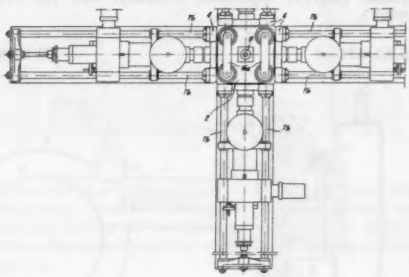
Filed Apr. 4, 1972, Ser. No. 240,978

Claims priority, application Switzerland, Apr. 15, 1971, 5445/71

Int. Cl. B29f *1/06*

U.S. Cl. 425—450 R **9 Claims**

An injection molding machine comprises a mold clamping unit which includes a fixed platen and a movable platen which is guided on the fixed platen on guide rods which are mounted in the fixed platen. The fixed platen is generally rectangular and it has at least four relatively narrow end faces on at least three of which there is mounted an injection molding unit. Each mounting part for the injection molding unit includes transversely spaced flanges which extend over the front face of the fixed platen and each includes an injection molding nozzle guide. The guide supports each individual injection nozzle between the flanges of each mounting part. The mounting parts are identical and are accurately positioned on the respective narrow side face of the platen by means of adjusting wedges and adjustable slotted bolt connections.



3,817,680

SYNTHETIC FIBER SPINNING PLATE WITH COLUMMAR COATING LAYER

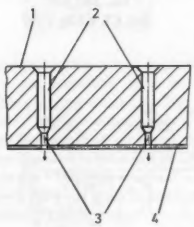
Wolfgang Gultner, Bad Hersfeld; Wolfgang Hohmann, Neuberg, and Rolf Ruthardt, Hanau, all of Germany, assignors to W. C. Heraeus GmbH, Hanau, Germany

Filed Oct. 2, 1972, Ser. No. 293,994

Claims priority, application Germany, Sept. 30, 1971, 2148773

Int. Cl. D01d *3/00*

U.S. Cl. 425—461 **5 Claims**



To provide for smooth flow of synthetic spinning liquid from a spinning plate, formed with spinning ducts extending through the thickness of the plate, the exit surface of the plate has a coating of adjacently located crystalline columns, of a thickness in the order of between 2–20 μm, the layer having a fine crystalline structure, in a plane parallel to the coated surface of the plate and the layer being made of at least one metal of titanium, vanadium, niobium, chromium, molybdenum, tungsten, iron, cobalt, nickel, gold, silver, tantalum, copper, aluminium, or platinum-type metals; these materials are preferably applied by vacuum condensation from a gaseous phase at a pressure of less than about 10^{-1} mm Hg.

3,817,681

OSCILLATING BURNER DEVICE

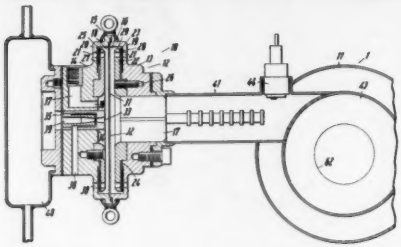
Franz Haag, and Otto Locher, both of Isny/Allgau, Germany, assignors to Motan Geselischaft mit beschrankter Haftung, Isny/Allgau, Germany

Filed Oct. 11, 1972, Ser. No. 296,550

Claims priority, application Germany, Oct. 13, 1971, 2150893

Int. Cl. F23c *3/02*

U.S. Cl. 431—1 32 Claims



A burner device having an oscillatable resonator tube with a discharge at one end and having a carburetor connected to the other end via a burner pipe. A tank is provided containing liquid to be injected into the resonator tube to create smoke. A pressure supply passage leads into the tank and a conduit leads out of the tank to the resonator tube and a control valve controls the passage and the conduit.

3,817,682

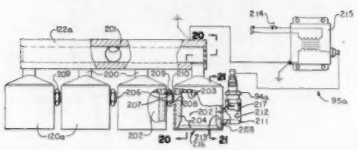
CARTON FORMING APPARATUS WITH SIMULTANEOUSLY IGNITED HEATERS

Alfred B. Lefebvre, Danville; Helmut E. W. Masch, San Jose; Louis Robert, San Mateo, and Hugh B. Morse, San Jose, all of Calif., assignors to Fireboard Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 187,170, Oct. 6, 1971, abandoned, which is a division of Ser. No. 32,836, April 29, 1970, Pat. No. 3,648,573. This application Dec. 13, 1971, Ser. No. 207,057

Int. Cl. F23q *9/00*

U.S. Cl. 431—6 8 Claims



An apparatus for forming cartons comprises feeding means, including a pivoted suction cup and cooperating vacuum belt conveying means, for individually feeding carton blanks to a forming means. Such forming means comprises a rotary table having a plurality of female forming dies radially positioned thereon. A ram-type male die is reciprocally mounted above the table to cooperate with each forming die to form the carton blank into tray form. Gas burner type heaters are mounted adjacent to the table for simultaneous ignition to discharge heated air onto partially folded corners of a polyethylene-coated carbon blank prior to when it is fully formed in the forming die. After the corners are compressed and sealed, stripping means engage the formed carton to move it onto a discharge conveyor.

3,817,683

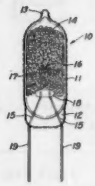
PHOTOFLASH LAMPS

Kurt H. Weber, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 112,913, Feb. 5, 1971, abandoned. This application Nov. 1, 1972, Ser. No. 302,756

Int. Cl. F21k *5/02*

U.S. Cl. 431—95 5 Claims



Minature photoflash lamps with a borosilicate glass envelope of less than 1 cc internal volume, a filling of hafnium or hafnium containing filamentary material and combustion supporting gas, giving integrated light outputs on flashing in the ranges of approximately 14,000 lumen seconds per cubic centimeter of bulb volume to 32,500 lm sec/cc.

3,817,684

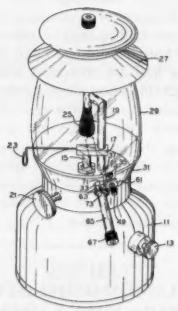
LANTERN IGNITER

James F. Sell, R.R. 3, Box 157, Muncie, Ind. 47302

Filed May 8, 1972, Ser. No. 251,104

Int. Cl. F21h *7/00*

U.S. Cl. 431—104 7 Claims



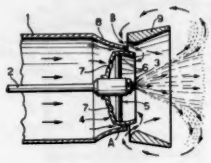
An igniter for igniting pressurized liquid fuel lanterns and the like is disclosed wherein a spark source is secured to the lantern and actuable from outside the lantern to provide a spark internal to the lantern. A gas charged propane or butane lighter is positioned close to the spark source and energized and then moved to a position in close proximity to the lantern mantle and generator or the generator of a similar pressurized liquid fuel device such, for example, as a camp stove, to heat the mantle and generator and vaporize the fuel and finally ignite that vaporized fuel.

3,817,685

COMBUSTION HEADS FOR BURNERS

Giuseppe Joannes, Rivoli, Italy, assignor to Finterm S.p.A. Gruppo Finanziario Termico, Grugliasco (Turin), Italy

Filed Feb. 16, 1972, Ser. No. 226,755
Claims priority, application Italy, Feb. 25, 1971, 67663/71
Int. Cl. F23l
U.S. Cl. 431—116 1 Claim



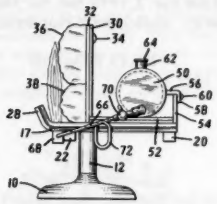
This invention provides a combustion head for burners of the kind in which primary air is supplied to a combustion zone through a supply pipe which coaxially surrounds a fuel supply pipe, the latter terminating in a spray nozzle surrounded by a cup. An ejector device of the annular or deflected jet type is associated with the primary air supply pipe and is energised by the primary air to cause a low pressure externally of the cup so as to draw into the head a portion of the burnt gases from the burner so that these burnt gases are recirculated in a zone adjacent the reaction zone to dilute the reagents and promote complete combustion.

3,817,686

SIMULATED LOG BURNER

Leonard M. Quittner, 1711 Lorraine Rd., Reading, Pa. 19604

Filed June 19, 1972, Ser. No. 263,786
Int. Cl. F25b *1/18*
U.S. Cl. 431—125 11 Claims



A simulated log burner consists of a grate assembly on which an element of ceramic material or the like and having a surface simulating a log is mounted. A fuel tank which may be mounted on the grate assembly supplies fuel via a fuel line to a burner supported on the grate assembly forwardly and generally below the ceramic element. The arrangement is such that fuel burned in the burner causes a flame to rise upwardly in front of the ceramic element to thereby simulate a burning log.

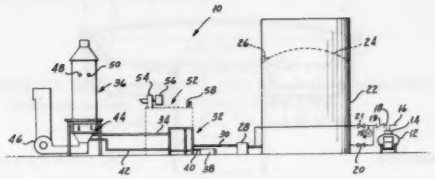
3,817,687

HYDROCARBON OXIDIZER SYSTEM

Louis Thomas Cavallero, Buffalo Grove, Ill., and Walter Joseph Elnicki, Monroe, N.Y., assignors to Aer Corporation, Ramsey, N.J.

Filed July 18, 1973, Ser. No. 380,251
Int. Cl. F23g *7/06*
U.S. Cl. 431—202 15 Claims

A pollution-free system for disposing of gasoline vapors at a tank truck loading station, in which a booster pump energized in response to pressure within a vapor saver tank which receives the truck tank vapors feeds the vapors from the vapor saver tank through a control valve to the supply line of the hydrocarbon oxidizer and in which means responsive to the temperature in the oxidizer operates the control valve to regulate the vapor flow to the oxidizer to maintain the temperature therein below a predetermined temperature and in which various safety devices are incorporated to ensure the safety of both the installation itself and of personnel working at the installation.

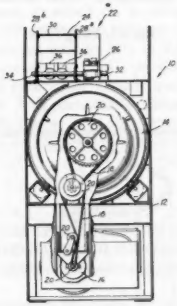


3,817,688

PIPE MOUNTING CLIP ARRANGEMENT

Glen W. Shadley, Herrin, Ill., assignor to Fedders Corporation, Edison, N.J.

Filed Feb. 16, 1973, Ser. No. 333,194
Int. Cl. F23d *13/24*
U.S. Cl. 431—343 7 Claims



An improved pipe mounting system is provided adapted for use in securing a gas manifold pipe to the combustion chamber of a clothes drying machine. The sidewalls of the combustion chamber are provided with a pair of aligned openings to receive the manifold pipe and the system further includes a pair of spring clips positioned in cutouts in the combustion chamber walls. The cutouts and ends of the clips cooperate to securely hold the clips in position exerting spring tension against the manifold pipe.

3,817,689

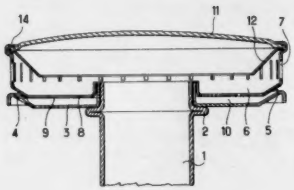
GAS BURNER HAVING LATERAL OPENINGS AND A DEVICE FOR DEFLECTING THE FLAMES UPWARDS

Marcel Capy, Olivet, France, assignor to Compagnie Europeenne Pour L'Equipement Menager CEPEM, Paris, France

Filed Nov. 15, 1972, Ser. No. 306,775
Claims priority, application France, Nov. 15, 1971, 71.40801
Int. Cl. F23d *13/36*
U.S. Cl. 431—349 10 Claims

A gas burner according to the invention comprises: a mixing chamber having a thin, vertical, lateral wall perforated by outlets for the combustion mixture, a deflector disposed inside

the mixing chamber; said deflector having a slanting part which directs the flames upwards in a slanting manner, and a cover coated with a self-cleaning catalytic enamel. The cover



may be made of metal or ceramic material. It may or may not constitute the deflector and it may or may not be detachable. The burner also comprises a crown for distributing the heat during cooking operations requiring low heat.

3,817,690

COMBUSTION DEVICES

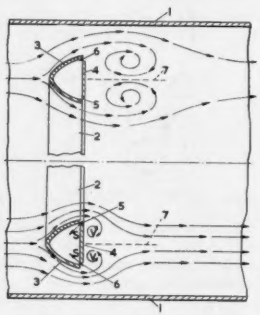
William Dean Bryce, Farnham, and Peter George Street, Fleet, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 31, 1972, Ser. No. 302,395

Claims priority, application Great Britain, Nov. 1, 1971, 50635/71

Int. Cl. F02g *1/00*

U.S. Cl. 431—350 **4 Claims**



The invention relates to combustion devices wherein a flame stabilisation zone is formed in the wake of a body disposed in a swiftly moving gas stream.

The invention provides a combustion device comprising a bluff-body disposed in a gas stream, the body having an aerodynamically smooth upstream-facing portion terminating downstream through a step change of section in a substantially flat downstream-facing surface extending transversely to the direction of flow of the stream, and means for influencing flow over the body to induce stable vortex formation adjacent said downstream facing surface.

Preferably such means comprise suction means, suction being applied from the interior of the body in each region of the step change of section.

Combustion devices according to the invention may include a flow divider extending downstream of the downstream facing surface to separate vortices originating at the step change of section.

3,817,691

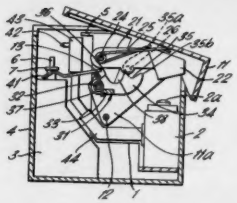
PIEZOELECTRIC CIGARETTE LIGHTER

Tetsuo Tatsumi, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Oct. 16, 1973, Ser. No. 406,899

Int. Cl. F23q *3/01*

U.S. Cl. 431—255 **5 Claims**



A piezoelectric cigarette lighter utilizing a piezoelectric igniter wherein a mechanism for giving an impact to an impact receiving area of the piezoelectric igniter employs the principle of leverage. This mechanism employs a manipulatable body to which a finger pressure is applied, a striker and a cam lever disposed between the manipulatable body and the striker. A first spring element is used to bias the manipulatable body and the striker in the opposite directions and a second spring element is used to bias the manipulatable body and the cam lever in the opposite directions. A spring force exterted by the second spring element on the cam lever acts in the same direction as a spring force exerted by the first spring element on the manipulatable body so that the former cooperates with the finger pressure to render the first spring element to accumulate necessary energy for producing the impact.

3,817,692

AUTOMATIC CIGARETTE LIGHTER

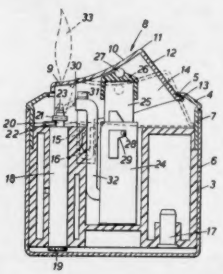
William Retzler, Wickham, England, assignor to Colibri Lighters Ltd., London, England

Filed Apr. 2, 1973, Ser. No. 346,872

Claims priority, application Great Britain, Apr. 7, 1972, 16198/72

Int. Cl. F23q *2/08*

U.S. Cl. 431—131 **7 Claims**

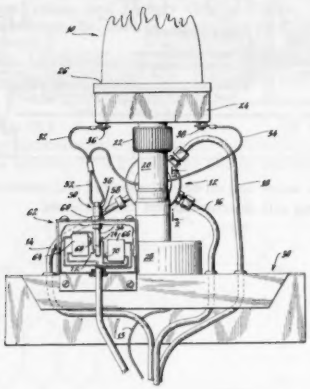


The invention is concerned with an automatic cigarette lighter of the kind in which an actuating member works in an aperture in a top wall of the lighter casing and is urged to a rest position in which the aperture is effectively closed. An integral front end of the actuating member forms a burner cover and rests above the burner in the rest position. The rear end of the actuating member is inclined rearwardly and downwardly and the actuating member is mounted so that when it is displaced to operate the lighter it moves generally in the rearward direction to expose the burner and the inclined rear end of the actuating member moves closely beneath an adjacent surface of the top wall of the casing at the adjacent end of the aperture.

3,817,693
SAFETY INTERLOCK FOR BURNERS

Carl R. Sebens, Stratford, and Albert J. Russo, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 2, 1973, Ser. No. 337,568
Int. Cl. F23d *11/36*
U.S. Cl. 431—153 3 Claims

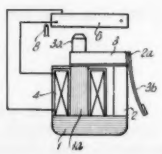


This is a safety interlock in a laboratory burner for insuring that no fuel (or special oxidant) can be supplied to the burner under certain conditions. In particular a plug is attached to a removable burner head and a jack is rigidly attached to the other parts of the burner assembly; fuel flow is inhibited (as by disabling of an electric switch which opens a normally closed solenoid valve in the fuel supply) unless the plug is in the jack, so that no fuel can flow when the head is removed from the burner. Where more than one type of burner head is used with different fuel or oxidants, a second switch (say, controlling the flow of a special oxidant) in the jack is actuated by the special (longer) plug associated with only those burner heads intended to be used with the special oxidant (or fuel), so that such special oxidant can be supplied only when the burner head specifically designed for it is attached to the burner assembly.

3,817,694
IGNITION DEVICE

Minoru Makino, Tokyo, Japan, assignor to Kabushiki Kaisha Tanita Seisakusho, Tokyo-to, Japan

Filed June 5, 1972, Ser. No. 259,710
Claims priority, application Japan, June 11, 1971, 46-40957
Int. Cl. F23q *3/01*
U.S. Cl. 431—255 4 Claims

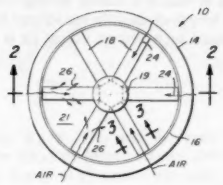


A lighter ignition mechanism includes a solenoid connected to a pair of normally closed electrodes mounted on resilient arms and located adjacent a lighter burner nozzle. A magnetic yoke includes a leg about which the solenoid is wound, a permanent magnet leg, and a leg swingable between yoke opening and closing positions. A camming wedge is located on the swingable leg and moves between followers located on the resilient arms to separate the electrodes following the opening of the yoke and during the interval of induced current in the solenoid to produce a discharge between the electrodes of long duration. A capacitor, in one form of the mechanism, is connected across the solenoid.

3,817,695
AIRDUCTOR FLARE

Robert D. Reed, and Robert E. Schwartz, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed June 13, 1972, Ser. No. 262,244
Int. Cl. F23d
U.S. Cl. 431—202 8 Claims

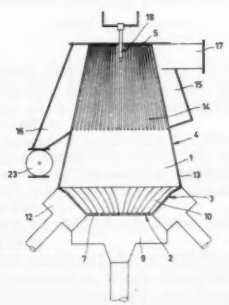


This invention describes an improved flare stack system for burning dump gases, in which air is induced into the main body of the vertically rising gas column by means of radial transverse obstructions, such as bars or strips, which cause a deflection of the uprising gas and a pressure drop due to the obstruction, which induces air radially inwardly, which mixes with the rising gas. This particularly advantageous structural system for air induction can be supplemented by the use of radial steam jets or steam pipes in conjunction with the radial strips.

3,817,696
METHOD OF AND APPARATUS FOR FLUIDIZED BED TREATMENT OF SOLIDS OR LIQUIDS

Horst Hereth, Ludwig-Thoma-Strasse 36, 8031 Puchheim, Germany

Filed Aug. 9, 1972, Ser. No. 279,284
Int. Cl. F27b *15/10*; F26b *3/08*, *17/00*
U.S. Cl. 432—15 11 Claims



The apparatus is constructed so that the carrier medium is fed into the upwardly flaring member at an angle to form a

fluidized bed having a sharply defined depression or dip in the center. The lower pressure in the depression produces a reverse flow in a downward direction so that skeins from the fluidized bed may be returned into the bed without being directly removed from the furnace.

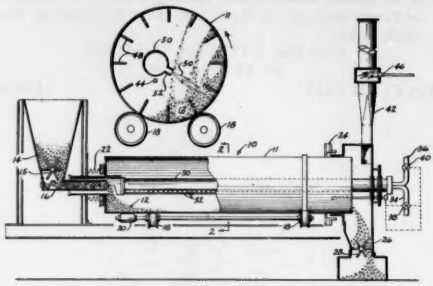
3,817,697

ROTARY KILN FOR METAL CHIP DEOILING

Edward George Parobek, Seven Hills, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 15, 1972, Ser. No. 315,741
Int. Cl. F27b *7/02*
U.S. Cl. 432—105 **1 Claim**

A rotary kiln in which oil and water can be removed from the metal chips in which a burner having outlets positioned throughout the length of the kiln introduces heat. The fuel to air ratio is adjusted such that no excess air is available in the kiln for combusting the oil coating on the chips. Thus the chips are subject to pyrolization in a reducing atmosphere,



with the water and oil being vaporized and removed from the kiln along with the combustion exhaust gases.

3,817,698

KERATINIC FIBER DYE COMPOSITIONS CONTAINING N,N'-DI-NITROPHENYL OR NITROPHENYL - ANTHRAQUINONE SUBSTITUTED ALKYLENE DIAMINE DYES AND THE MONO-QUATERNARY AMMONIUM SALTS THEREOF

Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, France, and Hubert Gaston-Breton, Tokyo, Japan, assignors to Societe Anonyme dite: L'Oreal, Paris, France

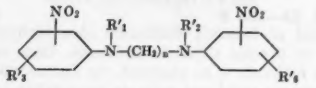
No Drawing. Continuation-in-part of abandoned application Ser. No. 655,337, July 24, 1967. This application Jan. 26, 1971, Ser. No. 109,930

Int. Cl. A61k *7/12*

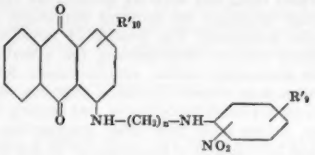
U.S. Cl. 8—10.1 **11 Claims**

A dye composition for dyeing keratinic fibers comprises an aqueous solution of a dye having one of the following formulas:

(1)

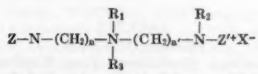


(2)



and

(3)



wherein R'_1 and R'_2 are hydrogen, lower alkyl, hydroxy lower alkyl and lower alkyl amino lower alkyl; R'_3 is hydrogen, lower alkoxy and

wherein R'_4 and R'_5 are hydrogen, lower alkyl, hydroxy lower alkyl, lower alkylamino lower alkyl and amino lower alkyl; R'_6 is hydrogen, lower alkoxy and

wherein R'_7 and R'_8 are hydrogen, lower alkyl, hydroxy lower alkyl and amino lower alkyl; R'_{10} is

wherein r'' and r''' are hydrogen and lower alkyl; R'_9 is

wherein R_{11} and R_{12} are lower alkyl and amino lower alkyl; Z and Z' are dimethylamino nitro phenyl and nitro phenyl; R, R_1, R_2 and R_3 are hydrogen and lower alkyl, *n* in formulas (1) and (2) is 2–4 and *n* and *n'* in formula (3) is 2–6; and X is halogen. The dye is present in amounts of 0.1–3 percent by weight of the composition and after being applied to the hair is left thereon for a period of about 5–30 minutes at a temperature between 15–35° C., followed by rinsing, washing and drying the hair.

3,817,699

INDAMINES, PROCESS FOR PRODUCING THE SAME AND COMPOSITIONS CONTAINING INDAMINES AND PROCESSES FOR DYEING KERATINOUS FIBERS USING SAID COMPOSITIONS

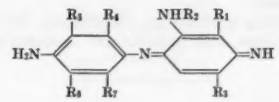
Gregoire Kalopissis, Paris, Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,457 Claims priority, application France, Sept. 18, 1970, 7034042

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.1 **10 Claims**

Indamine having the formula



wherein R_1, R_3, R_4, R_5, R_6 and R_7 each represent hydrogen, a lower alkyl or lower alkoxy and R_2 represents hydrogen or a lower acyl, and their acid addition salts and their double zinc salts are usefully employed for dyeing keratinous fibers and, in particular, human hair. The indamines can be in a tautomeric form of that represented above.

3,817,700

PROCESS FOR TREATING ACRYLIC FIBERS TO OBTAIN CARBONIZABLE AND GRAPHITIZABLE SUBSTRATES

Virginia C. Menikheim, Chapel Hill, N.C., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of abandoned application Ser. No. 72,223, Sept. 14, 1970. This application Apr. 13, 1972, Ser. No. 243,840

Int. Cl. D06c *7/04;* **C01b** *31/07*

U.S. Cl. 8—115.5 **8 Claims**

A process is provided for producing a heat-stabilized char or substrate from acrylic fibers which can be converted into high quality carbon or graphite fibers. The fibers are first treated in a polyol solution containing a basic nitrile polymerization catalyst followed by an air-oxidation at temperatures of 270° C. and above. The pre-oxidation treatment drastically reduces the time normally required for effecting the necessary oxidation. The carbonizable or graphitizable substrates obtained yield carbon and graphite fibers of improved properties.

3,817,701

CORONA TREATMENT OF TEXTILES

Walter J. Thorsen, El Cerrito, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

Continuation-in-part of application Ser. No. 861,225, Sept. 19, 1969, now Patent No. 3,632,299, which is a continuation-in-part of abandoned application Ser. No. 442,561, Mar. 24, 1965. This application July 30, 1970, Ser. No. 59,398

Int. Cl. B01k *1/00;* **D06m** *3/08*

U.S. Cl. 8—116 R **10 Claims**

A process for enhancing the spinnability of fibers, particularly wool and cotton, which comprises exposing said fibers to a corona discharge zone for the purpose of imparting both a transitory and a permanent increase in cohesiveness to said fibers.

3,817,702
ANTIMICROBIAL TEXTILE MATERIALS

Wilfried Paulus, Krefeld-Bockum, and Otto Pauli, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,532
Claims priority, application Germany, Dec. 16, 1969, P 19 62 899.0
Int. Cl. D06m *13/00*
U.S. Cl. 8—120 **16 Claims**

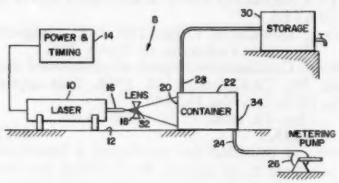
Textile materials containing reactive hydrogen sites, e.g. cellulosics such as cotton, are treated with compounds which, through reaction with the reactive hydrogen sites, introduce anion-active sites. These anion-active sites are thereafter chemically combined in salt form with cation-active microbicides. For example, a cotton fabric is reacted with the chlorine atoms of p-N(4,6-dichloro)-s-triazinylaminobenzene-carboxylic or -sulfonic acid and the acid group is thereafter reacted with a bactericidal quaternary ammonium salt or an N-chloro-phenyl-alkylene polyamine.

The resulting products are bactericidal, free from attack by mildew and suitable for autosterile surgical dressings.

3,817,703
LASER ENERGIZED STERILIZATION METHOD AND APPARATUS

Richard W. Atwood, Mill Valley, Calif., assignor to Filtering Materials Inc., Richmond, Calif.

Continuation-in-part of application Ser. No. 803,906, Mar. 3, 1969. This application Sept. 9, 1971, Ser. No. 178,959
Int. Cl. A61l *3/00, 1/00;* **A23l** *3/26*
U.S. Cl. 21—2 **9 Claims**



A method and apparatus for the sterilization of food, beverages, medicines, medical supplies, etc., in which a high energy density light beam, such as a laser beam, is projected through the material and thereby contacts and destroys all living matter suspended in the material and having an absorption at a wavelength approximate the wavelength of the light beam. The wavelength of the light is further selected so that the material is transparent to the light at the selected wavelength.

3,817,704
SLUDGE- AND CORROSION-INHIBITING COMPOSITIONS

Donald D. Dearmont, Stow, Ohio, and Forrest D. Stockwell, Glendale Heights, Ill., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,405
Int. Cl. C23f *15/00*
U.S. Cl. 21—2.5 R **5 Claims**

The formation of sludge is materially inhibited in systems wherein a metal surface is in contact with a dissimilar material such as rubber in the presence of a working fluid by the use of a synthetic rubber composition containing certain silaceous materials.

3,817,705
MEANS FOR THE INDICATION OF NITRITE

Alfred Stein, Wilhelm Baumer, and Dieter Schmitt, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,340
Claims priority, application Germany, Aug. 19, 1971, P 21 41 487.9
Int. Cl. G01n *31/22*
U.S. Cl. 23—230 R **10 Claims**

Detection of nitrite ions, comprising an absorbent support carrier impregnated with particular diazotizable amines, a component coupling with diazonium salts, and an acid.

3,817,706
FLUORESCENCE QUANTITATIVE THIN LAYER CHROMATOGRAPHIC METHOD

Bruce G. Smith, Arlington Heights, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

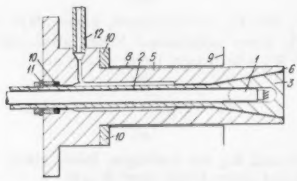
No Drawing. Filed Oct. 16, 1972, Ser. No. 297,639
Int. Cl. G01n *21/22, 31/08*
U.S. Cl. 23—230 B **4 Claims**

Method of inducing fluorescent chromophores into a variety of organic substrate molecules. Once introduced into the molecule to be analyzed, the fluorescent chromophore permits rapid and accurate quantitative analysis of the substrate precursor by standard fluorescent spectrophotometric techniques. The process of introducing the chromophore involves impregnating the adsorbent material with ammonium sulfate, simultaneously developing the unknown with known standards, exposing the developed plate to *tert*-butyl hypochlorite, and heating the chromatogram. Amino acids, fatty acids, triglycerides, sugars, steroids and prostaglandins are analyzed by this technique in microgram quantities.

3,817,707
PROBE HOLDER

Jeffrey Cummings, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 8, 1973, Ser. No. 330,881
Int. Cl. G01n *17/00*
U.S. Cl. 23—253 C **1 Claim**



A test probe holder consists of a hollow tube, externally flared at one end, and a second hollow tube with a corresponding internal flare and making a snug fit around the first tube. The tubes can be relatively rotated so that orifices in their walls are coincident and thereby expose the test probe.

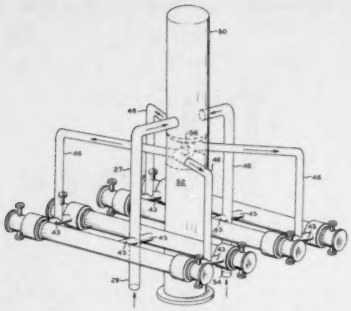
3,817,708
ALKYLATION APPARATUS

Walter F. Vernon, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation-in-part of abandoned application Ser. No. 14,062, Feb. 25, 1970. This application Apr. 10, 1972, Ser. No. 242,542
Int. Cl. C07c *3/54;* **F28d** *7/06*
U.S. Cl. 23—260 **7 Claims**

Fluid heat exchangers comprising two U-tube bundles disposed within a common exterior shell with their re-

spective bends in an adjacent, nonoverlapping relationship at the mid portion of said shell, wherein multiple exchanger shells can be placed in a side-by-side position, joined



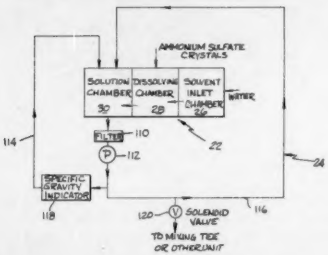
with communicating entry and exit fluid conduits. The heat exchangers communicate through fluid outlet headers to tubular reactors in combination with an alkylation settler.

3,817,709

SOLUTE DISSOLVING APPARATUS HAVING SOLUTION CHAMBER WITH SOLUTION CIRCULATION MEANS

Dennis Lee Ramge, Waterville, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Feb. 27, 1973, Ser. No. 336,399
Int. Cl. B01d *11/02*
U.S. Cl. 23—267 E **1 Claim**



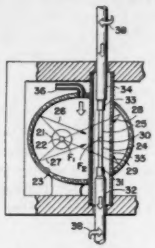
An improved solute dissolving system is utilized in a binder mixing system which supplies binder to a glass filament or fiber forming operation. The system includes a tank having a solvent inlet chamber, a solute dissolving chamber and a solution chamber. The solute dissolving chamber is provided with a chute through which the solute is introduced into the dissolving chamber to form a saturated solution. The solvent inlet chamber is coupled by a passageway to the dissolving chamber and the dissolving chamber is coupled to the solution chamber by a passageway provided with a sieve. The solution from the tank is continuously pumped through a closed loop which removes and reintroduces the saturated solution into the solution chamber. The closed loop is provided with an outlet connected to the binder mixing system for tapping off the solution as it is needed in the binder mixing system for the formation of binder.

3,817,710

APPARATUS FOR PRODUCING CRYSTAL

Takayuki Mizutani and Kouichi Matsumi, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Sept. 13, 1971, Ser. No. 179,714
Claims priority, application Japan, Sept. 18, 1970, 45/82,438
Int. Cl. B01j *17/10*
U.S. Cl. 23—273 SP **7 Claims**



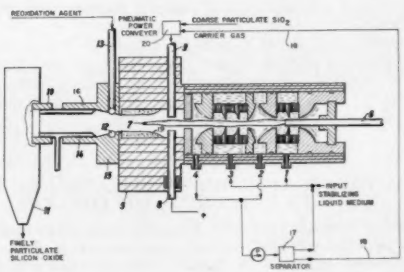
Crystal growing apparatus includes a prolate spherical reflecting mirror having a halogen lamp at one focus thereof, and the molten junction between seed and source crystalline materials at the other mirror focus. Lamp life is extended by separating the lamp and crystalline material, and flowing a gas about the lamp. Also, the temperature of the molten crystal material is maintained essentially homogenous in the circumferential direction by employing a minor-major mirror diameter ratio in the range 0.87 to 0.96.

3,817,711

APPARATUS FOR PREPARATION OF FINELY PARTICULATE SILICON OXIDES

Tibor Kugler, Sins, and Jakob Silbiger, Basel, Switzerland, assignors to Lonza Ltd., Gampel (Canton of Valais), Switzerland

Original application Mar. 12, 1970, Ser. No. 18,902, now Patent No. 3,649,189. Divided and this application Dec. 6, 1971, Ser. No. 205,250
Claims priority, application Switzerland, Mar. 31, 1969, 4,826/69
Int. Cl. C01b *33/00;* **B01j** *1/00*
U.S. Cl. 23—277 R **5 Claims**



A liquid stabilized plasma burner having a cathode and an anode spaced therefrom, together with charging means including stabilizing liquid medium inlet ports for feeding a liquid stabilizing medium to the plasma burner, and withdrawng means including outlet ports for withdrawing liquid stabilizing medum from the burner together with a gaseous portion that is evaporated and decom-

posed in the arc zone of the burner is provided with an input conduit in the vicinity of the anode connected with a pneumatic powder conveyer into which is fed coarse particulate silicon dioxide and the gaseous evaporated stabilizing medium from the withdrawing means used to convey the particulate silicon dioxide to the plasma arc, the outlet ports of the plasma burner connected to convey the evaporated and liquid stabilizing medium to a separating device from which liquid stabilizing medium is recycled back to the inlet ports of the plasma burner and the evaporated stabilizing medium is conveyed to the pneumatic powder conveyer for conveying medium, an insulated vessel having an axially directed reaction space positioned outwardly of the anode and in alignment with the cathode and bounded in the radial direction and a quenching device positioned in axial alignment therewith and containing a quenching spray therein to form finely particulate silicon monoxide. A reoxidation vessel having a reoxidation space axially positioned between the insulated vessel and a quenching device may be utilized with a reoxidation spray therein for producing silicon dioxide.

3,817,712

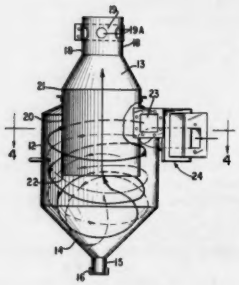
SMOKE ABATER

Hobart L. Wentworth, Barrington, Ill., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Nov. 26, 1971, Ser. No. 202,223

Int. Cl. F23c *9/04*; F23g *7/06*

U.S. Cl. 23—277 C **7 Claims**



Smoke entering a smoke abater is burned as it proceeds along a downwardly spiralling path and then moves vertically upwardly to be exhausted from the abater. Air is introduced into the abater at the point the smoke enters the abater and at the exhaust for the products of combustion of the smoke. Air is mixed therewith to lower the temperature of the exhausted products.

3,817,713

APPARATUS FOR THE PURIFICATION OF AIR WITH A MERCURY VAPOR CONTENT

Vasile Ionescu, Bucharest, Rumania, assignor to Institutul de Cercetari si Proiectari, Automatizari si Proiectari, Uzine si Instalatii Pentru Industria Electrotehnica, Bucharest, Rumania

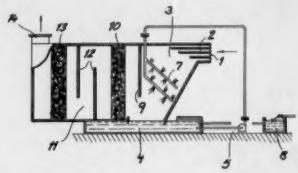
Filed May 10, 1971, Ser. No. 141,925

Claims priority, application Rumania, May 13, 1970, 63,342

Int. Cl. B01j *1/14*

U.S. Cl. 23—284 **1 Claim**

An apparatus for the removal of mercury vapor from air containing same, which comprises introducing the air into the top of the first chamber which is larger at the top than at the bottom and subjecting the air therein to spray of aqueous sodium sulfide solution, the liquid being thereafter collected along the smaller floor of this chamber in a tank from which the sodium sulfide solution is circulated. The air is then induced to flow in an undulat-



ing path around vertical baffles and through filters which trap (hold back) any residual droplets before being released to the atmosphere.

3,817,714

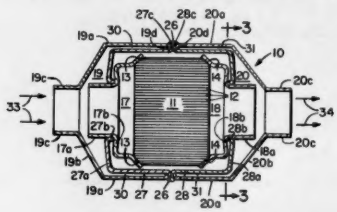
CATALYTIC CONVERTER

Robert F. Wiley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,065

Int. Cl. F01n *3/14*; B01f *9/04*

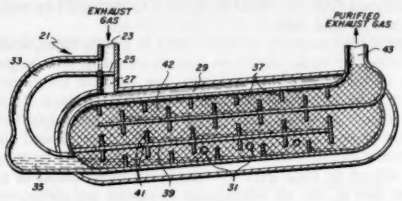
U.S. Cl. 23—288 F **4 Claims**



A catalytic oxidation converter to be used in exhaust systems of internal combustion engines for emission control purposes. The converter comprises an assembly including pairs of circular and generally frusto-conical or funnel shaped and concentric metal members, housings, or casings forming a container circumferentially surrounding a cylindrical honeycomb core catalytic member of a material having high temperature durability and a low coefficient of thermal expansion, such as a refractory ceramic material, and the container is designed to compensate for the differences in thermal expansion of the material of the converter and the metal material of the assembly of the housings or casings of the container. Annular spaces are provided between each of said pairs of housings or casings and means are provided for supplying a flow of air or other suitable oxygen containing gas to said annular spaces in regions thereof adjacent the center of the converter to aid in cooling said housings or casings while supplying oxygen necessary for the catalytic oxidation of exhaust gases from an internal combustion engine as they pass through the core member of the converter.

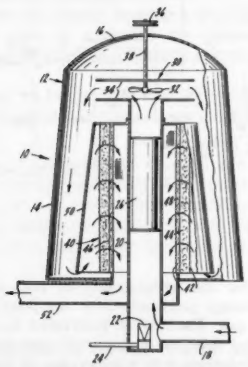
3,817,715
MUFFLER DEVICE
Le Roy F. Grantham, Calabasas, Calif., assignor to Rockwell International Corporation
Continuation-in-part of abandoned application Ser. No. 684,239, Nov. 20, 1967. This application Feb. 20, 1970, Ser. No. 13,245
Int. Cl. B01j *9/04;* F01n *3/04*
U.S. Cl. 23—288 F 11 Claims

A muffler unit, adapted for use with an internal combustion engine which contains an absorbent salt which is solid at room temperature and molten at the operating temperature of the internal combustion engine. The absorbent salt removes impurities present in the exhaust gas



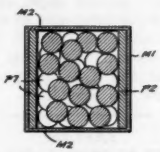
of the internal combustion engine when this gas is caused to come in contact with the absorbent salt. A preferred molten salt mixture contains alkali metal carbonates as the active absorbent.

3,817,716
CATALYTIC INCINERATION APPARATUS
Erwin C. Betz, 54 Mill Valley Road, Palatine, Ill. 60067
Filed Nov. 18, 1971, Ser. No. 200,042
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 F 10 Claims



The invention provides an apparatus for the catalytic incineration of waste gases containing hydrocarbons. In its broad aspects, the invention comprises cracking hydrocarbons in the presence of a cracking catalyst and subsequently oxidizing the hydrocarbons in the presence of an oxidation catalyst. The apparatus comprises means defining a cracking chamber containing a cracking catalyst together with means for delivering gases to the cracking chamber and means defining an oxidation chamber. The oxidation chamber contains an oxidation catalyst, and means are provided for delivering waste gases from the cracking chamber to the oxidation chamber.

3,817,717
APPARATUS FOR RECOMBINING HYDROGEN AND OXYGEN AND PROTECTIVELY RETURNING WATER OF RECOMBINATION TO THE BATTERY ELECTROLYTE
Ekkehard L. Kreidl, Wayland, Mass., and Richard G. Acton, Prestbury, England, assignors to Koehler Manufacturing Company, Marlboro, Mass.
Original application Mar. 6, 1970, Ser. No. 17,070, now abandoned. Divided and this application Feb. 14, 1972, Ser. No. 226,041
Int. Cl. B01j *9/04;* H01m *1/08, 35/00*
U.S. Cl. 23—288 R 4 Claims



A hydrogen-oxygen recombining device for use in secondary batteries comprising a catalytic mass and an enclosure body having the catalytic mass totally enclosed therewithin. The catalytic mass includes a refractory substrate and a predetermined quantity of catalytic material distributed on the substrate. The enclosure body consists solely of plastic hydrophobic material and has a portion which is gas permeable. The hydrophobic material, including its permeable portion, prevents liquid and mist from battery electrolyte from entering said body and contaminating said catalytic mass. The permeable portion permits hydrogen and oxygen to enter said body and contact said catalytic mass. The permeable portion also permits water vapor formed by recombining the hydrogen and oxygen to diffuse from said body. The catalytic mass has a catalytic metal content equivalent to a palladium content of not more than .1% by weight of the substrate. The catalytic mass, when inducing an exothermic reaction to recombine the hydrogen and oxygen, being characterized by a limited temperature rise within limits below that temperature at which hydrophobicity and permeability of the enclosure body would be changed.

3,817,718
PROCESS FOR THE RECOVERY OF AMMONIUM SULPHATE FROM AN AQUEOUS AMMONIUM SULPHATE SOLUTION CONTAINING METHIONINE
Georg J. Maass, Sittard, and Hendrik A. Korpel, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Filed Apr. 10, 1969, Ser. No. 815,226
Claims priority, application Netherlands, Apr. 10, 1968, 6805152
Int. Cl. B01d *9/02;* C01b *21/54;* C07c *103/52*
U.S. Cl. 23—302 2 Claims

A process for recovering ammonium sulphate from an aqueous solution of ammonium sulphate and methionine is disclosed, wherein the ammonium sulphate is recovered from the solution by crystallization at a weight ratio of methionine/ammonium sulphate of between 0.01 and 0.3, and at a pH of between 0.2 and 6. The ammonium sulphate recovered by the crystallization step contains less than 1% by weight of methionine, and is in a form suited for fertilizer production.

3,817,719

HIGH TEMPERATURE ABRADABLE MATERIAL AND METHOD OF PREPARING THE SAME

Peter W. Schilke, Meriden, and David V. Rigney, Portland, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 161,946, July 9, 1971. This application Mar. 28, 1973, Ser. No. 345,619

Int. Cl. B22f *1/00, 15/00, 7/00*

U.S. Cl. 29—182.5 **10 Claims**

A homogeneous and porous abradable seal material structure comprising principally β and γ phases for use in elevated temperature operating apparatus consisting essentially of, by weight 48–68 percent Ni, 7–17 percent Cr, 1–20 percent Co, 10–26 percent Al, up to 3 percent elements selected from the group consisting of B, C, Si, P and W, up to 7 percent of a refractory metal selected from the group consisting of yttrium, hafnium and lanthanum and up to 7 percent dispersed powder material selected from the group consisting of mica, cobalt oxide, graphite, boron nitride, molybdenum disulfide, diatomaceous earth and vermiculite asbestos, the total amount of refractory metal and dispersed powder material not exceeding 10 percent, by weight.

3,817,720

ORGANIC SMOKE SUPPRESSANT ADDITIVE AND DISTILLATE HYDROCARBON FUEL COMPOSITIONS CONTAINING SAME

David Moy, Somerset, and William M. Caldwell, Jr., Princeton, N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,793

Int. Cl. C10l *1/02*

U.S. Cl. 44—56 **8 Claims**

Organic smoke suppressant additive and distillate hydrocarbon fuel compositions containing said additive. The additive comprises an ether of hydroquinone and a mixture of isopropyl alcohol and diacetone alcohol. The preferred distillate hydrocarbon fuel composition comprises a major proportion of diesel fuel and a minor proportion of the additive.

3,817,721

GASOLINE COMPOSITIONS

Warren L. Perilstein, Orchard Lake, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 828,753, May 28, 1969. This application Dec. 6, 1971, Ser. No. 205,359

Int. Cl. C10l *1/16*

U.S. Cl. 44—69 **40 Claims**

A method of reducing intake valve deposits formed in a spark ignition gasoline-fueled internal combustion engine is disclosed. The method features the use of gasoline containing a desposit reducing amount of a high molecular weight alkyl aromatic hydrocarbon or mixture of alkyl aromatic hydrocarbons.

The gasoline compositions and gasoline additive concentrates are also disclosed.

3,817,722

COMPOSITIONS FOR INHIBITING CORROSION AND ASH DEPOSITION IN FOSSIL FUEL BURNING EQUIPMENT

James F. Scott, Briarcliff Manor, N.Y., assignor to The Perolin Company, Inc., New York, N.Y.

Filed Aug. 17, 1972, Ser. No. 281,311

Int. Cl. C10l *1/28*

U.S. Cl. 44—76 **7 Claims**

Marked inhibition of corrosion and ash deposition in fossil fuel burning equipment is achieved by utilizing in the operation of such equipment additive components comprising sources of silicon and magnesium, the proportions being such as to provide a combined SiO_2 and MgO equivalent wherein the SiO_2:MgO ratio is greater than 2:1.

The additive components can be organic compounds, inorganic compounds or mixtures thereof, and such compounds or mixtures thereof can be either soluble or dispersible in water or oil. They can be individually or collectively blended with bulk fossil fuel prior to burning, introduced to the combustion zone separately from the fuel, or in the case of furnaces and boilers, introduced directly to the ash deposition zone.

In the combustion of fossil fuels in furnaces, boilers and diesels, the additive components should be present in amounts to provide at least 0.05 parts by weight of combined SiO_2 and MgO equivalent to each part by weight of ash in said fuel.

In the combustion of fossil fuels in gas turbines, wherein either or both vanadium and alkali metal will be present in the combustion products, the additive components should be present in amounts to provide at least 2 parts by weight of magnesium to each part by weight of vanadium in said fuel, with the SiO_2:MgO ratio of said components being such as to provide at least 2 parts by weight of silicon to each part by weight of alkali metal in said fuel and in the air combining therewith on combustion.

3,817,723

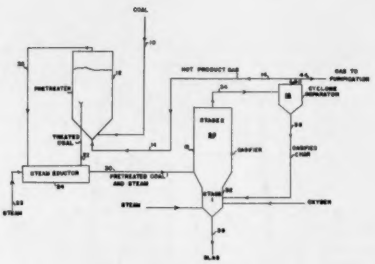
TWO-STAGE GASIFICATION OF PRETREATED COAL

Ernest E. Donath, St. Croix, Virgin Islands, assignor to the United States of America as represented by the Secretary of the Interior

Filed Mar. 23, 1972, Ser. No. 237,332

Int. Cl. C10j *3/16, 3/60*

U.S. Cl. 48—197 R **12 Claims**



A process for the pretreatment of coal and similar solids for two-stage gasification for the production of a methane rich gas. The coal is pretreated by reacting a bed of fluidized coal, or a slurry of coal and recycled oils, with a hydrogen rich product gas at temperatures much lower than those required for hydrogasification. The pretreated coal is mixed with steam and reacted in a second gasification stage with synthesis gas produced in the first gasification stage. The reaction in the second stage produces char entrained in a hydrogen rich product gas containing methane, which product gas is separated from the char and is passed through purification reactions and methanated to produce a methane rich gas. The separated char is recycled to the first stage and reacted with steam and oxygen to produce the synthesis gas for the

second stage. Temperatures in the first stage exceed 2,500° F. and temperatures in the second stage exceed 1,600° F., with the pressure in both stages maintained in excess of 50 atmospheres. The coal pretreatment is conducted in a single stage or in multiple stages.

3,817,724

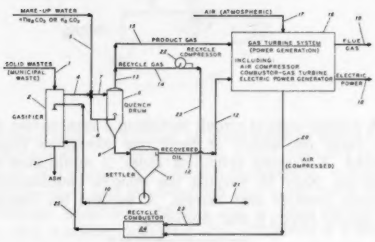
GASIFICATION OF SOLID CARBONACEOUS WASTE MATERIAL

John R. B. Ellis, Kentfield, and Frederick C. Franklin, Pinole, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed May 11, 1972, Ser. No. 252,449

Int. Cl. C10j *3/00, 3/16*

U.S. Cl. 48—209 **10 Claims**



A process for converting solid carbonaceous waste material to combustible gases which comprises:

(a) heating and reacting the carbonaceous waste material with reactive gases in a gasification zone to obtain said combustible gases and withdrawing the combustible gases from the gasification zone,

(b) partially or wholly burning a portion of said combustible gases in a recycle gas combustion zone to obtain hot recycle gas containing essentially no oxygen, and

(c) passing the hot recycle into the gasification zone to supply heat and said reactive gases to the carbonaceous material.

The process of the present invention can also be advantageously used for gasification of solid carbonaceous matter in general; however, certain modifications, such as in the reaction zone quench are preferably made when feeding lignite, coal, peat or the like to the gasification zone.

3,817,725

GASIFICATION OF SOLID WASTE MATERIAL TO OBTAIN HIGH B.T.U. PRODUCT GAS

Robert P. Sieg, Piedmont, and Robert J. White, Pinole, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed May 11, 1972, Ser. No. 252,450

Int. Cl. C10j *3/00, 3/16*

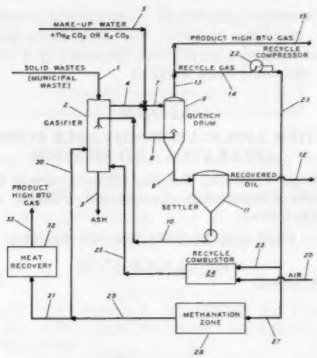
U.S. Cl. 48—209 **8 Claims**

A process for converting solid waste material to combustible gases which comprises:

(a) Heating and reacting the waste material with reactive gases in a gasification zone to obtain said combustible gases and withdrawing the combustible gases from the gasification zone,

(b) Methanating at least a portion of said combustible gases in a methanation zone to obtain methanated gases,

(c) Feeding at least a portion of said methanated gases to the gasification zone, and



(d) Withdrawing net product combustible gases from the gasification zone or from the methanation zone.

3,817,726

PROCESS FOR CRACKING OR STEAM REFORMING HYDROCARBONS USING AN ALKALI POLYALUMINATE CATALYST

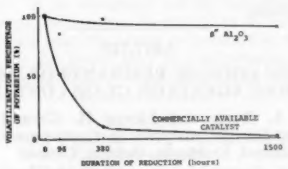
Goro Yamaguchi, 1554 Tsuda-machi, Kodaira-shi, Tokyo, Japan; and Susumu Komatsu, 1099 Uraimbe, Bizen-cho, Wake-gun; Kazuhiro Yoshizaki, 98 Uraimbe, Bizen-cho, Wake-gun; and Tetsuo Fukumoto, 783 Uraimbe, Bizen-cho, Wake-gun, all of Okayama, Japan

Original application Apr. 1, 1970, Ser. No. 24,543, now Patent No. 3,694,379, dated Sept. 26, 1972. Divided and this application June 29, 1972, Ser. No. 267,614

Claims priority, application Japan, Aug. 28, 1969, 44/67,562

Int. Cl. C01b *2/14*

U.S. Cl. 48—214 **12 Claims**



A catalyst for catalytic cracking or steam reforming of hydrocarbons and the process for producing the same, in which said catalyst being of alkali polyaluminates, or 2% or more of alkali polyaluminates supported on refractory carrier, or the above-mentioned catalysts which are added with 0.5% or more of chrome or a metal selected from Group VIII of the Periodic Table, or a mixture thereof.

3,817,727

ABRASIVE POLISHING SUSPENSIONS AND METHOD FOR MAKING SAME

Paul J. Yancey, San Diego, Calif., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 17, 1972, Ser. No. 235,651

Int. Cl. C08g *51/12*

U.S. Cl. 51—298 **6 Claims**

This invention relates to a permanent suspension of abrasive polishing powders. The suspension media consists essentially of a glycol base thickened by a neutralized carboxy polymethylene polymer.

3,817,728

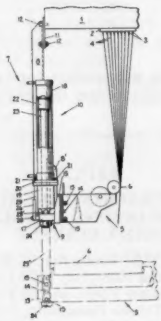
BINDER APPLICATOR MOVABLE SUPPORT APPARATUS AND METHOD

Svend Aage Petersen, Toledo, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Arapahoe County, Colo.

Filed Oct. 26, 1972, Ser. No. 300,926

Int. Cl. C03b *37/00*

U.S. Cl. 65—3 **9 Claims**



An apparatus and method are provided for movably supporting a binder applicator assembly of a glass fiber forming apparatus to position the applicator assembly remote from the glass fiber forming apparatus for servicing of the applicator assembly and to return the applicator assembly to its operation position. The apparatus for movably supporting the applicator assembly comprises a stationary support frame, a movable block on which the applicator is mounted, and a hydraulically-actuated device for lowering and raising the movable block and the applicator assembly.

3,817,729

IDENTIFICATION OF REMNANTS OF MOULD RELEASING AGENTS ON GLASS CONTAINERS

Barbara A. Steele and Lieven H. Gevaert, Toronto, Ontario, Canada, assignors to Consumers Glass Company Limited, Etobicoke, Ontario, Canada

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,584

Claims priority, application Canada, Feb. 22, 1973, 164,915

Int. Cl. C03b *9/30*

U.S. Cl. 65—26 **10 Claims**

The remnants of mould releasing agent on a container may be detected by the addition of heat stable fluorescent and/or phosphorescent compounds to the mould releasing agent, by incorporating such a compound into the mould releasing agent or by having such a compound as an integral part of the mould releasing agent so that the remnants of the mould releasing agent on the container may be differentiated either optically and electronically or visually from the normal container.

3,817,730

METHOD OF MAKING OPTICAL LINES IN DIELECTRIC BODY

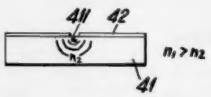
Teiji Uchida, % Nippon Electric Company, Ltd., 7–15 Shiba Gochome, Minato-ku, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 101,743, Dec. 28, 1970. This application Sept. 26, 1972, Ser. No. 292,305

Claims priority, application Japan, Dec. 29, 1969, 45/105,247

Int. Cl. C03c *15/00*

U.S. Cl. 65—30 **10 Claims**



A printed optical circuit including a transparent dielectric body on which at least one elongated region is formed. A varying refractive index is established in the dielectric body by varying the relative concentration of metallic positive ions therein. A method for fabricating the optical circuit is also described.

3,817,731

PRODUCTION OF LIGHT-CONDUCTING GLASS FIBERS BY VAPOR PARTIAL PRESSURE ATMOSPHERE

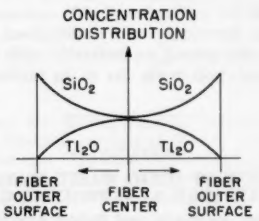
Mitsugi Yoshiyagawa, Tokyo, Japan, assignor to Nippon Selfoc Kabushiki Kaisha (also known as Nippon Selfoc Co., Ltd.), Tokyo-to, Japan

Continuation-in-part of abandoned application Ser. No. 861,904, Sept. 29, 1969. This application May 15, 1972, Ser. No. 253,364

Claims priority, application Japan, Oct. 3, 1968, 43/72,095

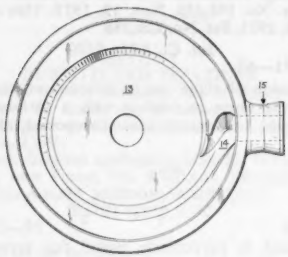
Int. Cl. C03b *15/00;* **F16c** *1/06*

U.S. Cl. 65—32 **6 Claims**



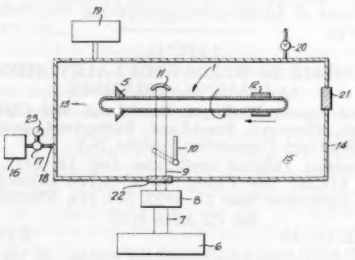
A glass fiber containing glass-forming and glass-modifying oxides is maintained at a temperature above its strain point and under a vacuum for a certain time thereby to have the modifying oxide vaporize off the fiber whereby the fiber has such a refractive index distribution, in a cross section thereof transverse to the direction of light advance therethrough, that the refractive index decreases continuously from the center toward the other periphery of the cross section.

3,817,732
METHOD OF MAKING GLASS-CERAMIC PUMP PARTS
Yu K. Pei, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Continuation of application Ser. No. 80,111, Oct. 12, 1970, which is a continuation-in-part of application Ser. No. 78,476, Oct. 6, 1970, both now abandoned. This application Apr. 16, 1973, Ser. No. 351,457
Int. Cl. C03b *19/00, 29/00*
U.S. Cl. 65—33 1 Claim



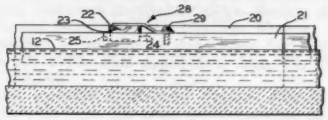
This invention is a method of press-forming thermally-crystallizable glass material, having a high viscosity characteristic, into pump parts wherein the material is heated to a molten state and press-formed into pump parts having intricate water-way designs and a solid discharge nozzle; and a coring operation that completes a passage in the discharge nozzle. The glass is then heated and crystallized to a ceramic state, known as a glass ceramic.

3,817,733
APPARATUS AND PROCESS FOR SUBDIVIDING SEALED GLASS TUBE CONTAINING RADIOACTIVE GAS
Oscar Thuler, 91 Bumplitz Strasse, Bern, Switzerland
Continuation-in-part of application Ser. No. 832,273, June 11, 1969, now Patent No. 3,706,543, dated Dec. 19, 1972. This application May 16, 1972, Ser. No. 253,766
Claims priority, application Switzerland, Aug. 22, 1968, 12,639/68
Int. Cl. C03b *21/06*
U.S. Cl. 65—56 3 Claims



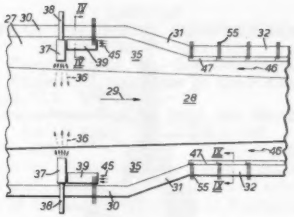
A sealed glass tube containing a luminophor and a radioactive gas is subdivided by heating the tube to fusion by means of a laser beam. The tube is heated within a sealed enclosure and means are provided for regulating the pressure within the enclosure so that the pressure exceeds that within the glass tube.

3,817,734
SUSPENDING DEVICE FOR SIDE WALL FENDERS
Donald E. Shamp, Millbury, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Aug. 21, 1972, Ser. No. 282,452
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A 6 Claims



A spring clip device used in conjunction with the "hold-down" of a buoyant carbon side wall fender in the bath area of a float glass apparatus for suspending the fender in operative position prior to the molten metal reaching its normal operating level during start up of the bath.

3,817,735
CARBON ELECTRICAL HEATERS IN FLOAT GLASS APPARATUS AND METHOD OF USING SAME
David Jones, St. Helens, England, assignor to Pilkington Brothers Limited, St. Helens, England
Filed Apr. 19, 1973, Ser. No. 352,665
Claims priority, application Great Britain, Apr. 21, 1972, 18,719/72
Int. Cl. C03b *18/00*
U.S. Cl. 65—99 A 17 Claims

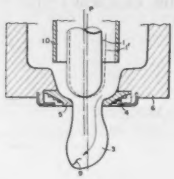


An electrical heater for use in apparatus for the manufacture of flat glass on a molten metal bath comprises heating elements in the form of bars of carbon material fixed on insulators in an elongated carbon box. Heat is conducted through the box floor to heat flows of molten metal beneath the box when the heater is immersed in the molten metal bath, or the heater may be roof-mounted with the box floor directed towards the molten metal bath.

3,817,736
METHOD FOR FEEDING AN UNSYMMETRICAL GOB OF GLASS
Ichiro Kojo, Eiichi Nakao, and Masayuki Katsumata, Takasago, Masahiro Kitahara, Sakura, Tetsuji Tanaka, Funabashi, Shinji Wada and Taisaku Tomioka, Takasago, and Kunio Takahashi, Funabashi, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Filed Sept. 14, 1972, Ser. No. 289,107
Claims priority, application Japan, Sept. 16, 1971, 46/71,238
Int. Cl. C03b *5/26*
U.S. Cl. 65—129 5 Claims

A method for feeding a gob of glass by severing the molten glass extruded by a needle through an orifice posi-

tioned at the bottom of a bowl of a forehearth, the improvement which comprises altering the flow rate of the



molten glass at said orifice in such a manner so as to form a gob of glass unsymmetric with respect to the center axis of the orifice.

3,817,737

SHAPING ROTATING HOLLOW BODIES OF THERMOPLASTIC MATERIALS WITH FLUID JETS

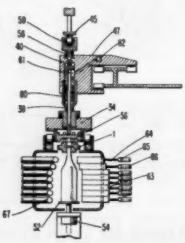
Francois Maurice Hennequin, Le Vesinet, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Original application Dec. 17, 1969, Ser. No. 885,935, now Patent No. 3,694,178. Divided and this application May 8, 1972, Ser. No. 251,416

Claims priority, application France, Dec. 17, 1968, 178,618; June 18, 1969, 6920315

Int. Cl. C03b *9/14*

U.S. Cl. 65—262 **7 Claims**



Thermoplastic material such as glass is shaped as a paste or parison having an entry for blowing. It is internally blown while its outer surface is shaped by successive effects of local gaseous counterpressures accompanied by heat.

3,817,738

REMOVAL OF ODORS FROM IMPURE SULFURIC ACID

Ernest H. Sprague, Augusta, Ga., assignor to Olin Corporation

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,578

Int. Cl. B01d *53/14;* **C05b** *11/08*

U.S. Cl. 71—40 **14 Claims**

A method for producing odorless sulfuric acid from an aqueous solution of impure sulfuric acid containing odor causing components by the addition of a hydrazine compound. The impure sulfuric acid may be obtained from the drying towers of an electrolytic chlorine plant. The resulting odorless acid is useful in the production of phosphate fertilizers.

3,817,739

METHOD OF INHIBITING THE GROWTH OF ALGAE

Eugene A. Abbott, Freeland, Alan J. Isquith, Midland, and Patrick A. Walters, Freeland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 198,452, Nov. 12, 1971. This application Feb. 14, 1972, Ser. No. 226,288

Int. Cl. A01n *9/00*

U.S. Cl. 71—67 **5 Claims**

The growth of algae can be retarded or prevented by bringing the algae in contact with a surface which is coated with an organosilicon compound of the unit formula

$$Y\text{-}R''N^{+}\left\{R'SiR_nO_{\frac{3-n}{2}}\right\}_a^{Me_{3-a}}$$

The method is particularly useful for preventing the growth of algae in aquariums by passing the aquarium water through a porous filter, the filter elements of which are coated with the siloxane. Specifically by continuously passing water of a household aquarium through a polyester filter, the filter element of which has been coated with the siloxane

$$Cl\text{-}C_{18}H_{37}\overset{Me_2}{\underset{|}{N}}{}^{+}(CH_2)_2SiO_{1.5},$$

buildup of algae in the aquarium is prevented for an extended period of time.

3,817,740

METHOD FOR PLANT GROWTH REGULATION

Tomas L. Fridinger, Edward L. Mutsch, and David R. Pauly, Stillwater, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 90,074, Nov. 16, 1970, now Patent No. 3,709,936. This application Nov. 17, 1971, Ser. No. 199,717

Int. Cl. A01n *9/20*

U.S. Cl. 71—76 **7 Claims**

A method for regulating the growth of plants by applying to growing plants an effective amount of alkylsulfonyl-, haloalkylsulfonyl-, aralkylsulfonyl or arylsulfonylhydrazones of 2,6-dihalobenzaldehydes is described.

3,817,741

CONTROL OF WEEDS WITH 2-ALKYLTHIO-4,6-DIAMINO-s-TRIAZINES

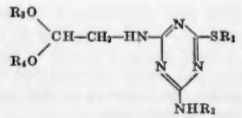
Manfred Kuhne, Pfeffingen, Basel-Land, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 16, 1971, Ser. No. 172,263, now Patent No. 3,746,710. Divided and this application June 25, 1973, Ser. No. 373,590

Int. Cl. A01n *9/22*

U.S. Cl. 71—93 **8 Claims**

New 2-alkylthio-4,6-alkylamino-s-trazines of the formula



(I)

wherein

R_1 represents the methyl or ethyl radical,

R_2 represents an optionally cyano-substituted alkyl radical having 1 to 4 carbon atoms, or a cycloalkyl radical having 3 to 5 carbon atoms,

R_3 and R_4 each represent, independently of each other, a lower alkyl radical, or together represent the ethylene group with the formation of a dioxolane ring,

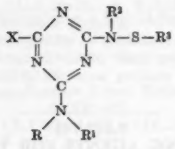
are described with processes for their production. These new compounds are used for the control of mono- and dicotyledonous weeds.

3,817,742
SUBSTITUTED TRIAZINES

Melancthon S. Brown, deceased, late of Berkeley, Calif., by Gustave K. Kohn, special administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application May 12, 1971, Ser. No. 142,758, now Patent No. 3,743,643. Divided and this application Apr. 23, 1973, Ser. No. 353,863
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **14 Claims**

Triazines of the formula



wherein X is halogen or alkylthio; R is hydrogen or alkyl; R^1 and R^2 are individually alkyl and R^3 is aryl optionally substituted with halogen atoms, alkyl groups or alkoxy groups, are useful as herbicides.

3,817,743
TREATMENT OF COPPER IRON SULFIDES TO FORM X-BORNITE

John B. Sardisco, Shreveport, La., assignor to Pennzoil Company, Houston, Tex.

Filed Sept. 18, 1972, Ser. No. 289,980
Int. Cl. C22b *1/12, 15/08*
U.S. Cl. 75—1 **26 Claims**

A method is described for treating chalcopyrite and other copper iron sulfides by reaction with sulfur vapor to form compositions which are more responsive to leaching. The method is amenable to continuous operation and under certain reaction conditions it may be used to produce as a principal product a granular, easy-to-handle material identified as X-bornite. Under other reaction conditions idaite is produced. The optimum reaction conditions for production of X-bornite are: (1) sulfur vapor partial pressure from about 200 mm. of Hg to about 760 mm. of Hg; (2) reaction temperature from about 460° C. to about 500° C.; and (3) residence time of at least about 6 minutes. The copper in the X-bornite and idaite can be easily solubilized with either chloride solutions or sulfuric acid solutions under oxidizing conditions. For sulfate systems copper recoveries in excess of 99% can be obtained by grinding the residue from the first leaching step to a particle size of at least about minus 200 mesh and then releaching.

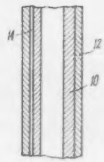
ERRATUM

For Class 75—20 see:
Patent No. 3,816,952

3,817,744
METHOD FOR COOLING A TUYERE OF A REFINING CONVERTER

Pierre Leroy, St. Germain-en-Laye, Marcel Gombert, Metz Queleu, and Emile Sprunck, Moyeuvre-Grande, France, assignors to Creusot-Loire, Societe Anonyme, Paris, and Wendel-Sidelor, Hayange, France

Continuation of abandoned application Ser. No. 50,393, June 29, 1970. This application Aug. 14, 1972, Ser. No. 280,203
Claims priority, application France, July 8, 1969, 6923145; Nov. 13, 1969, 6938923; June 23, 1970, 7023078
Int. Cl. C21c *5/34*
U.S. Cl. 75—60 **16 Claims**



A method for cooling the tip of a tuyere used for introducing an oxidizing gas into a molten metal bath of a bottom-blown refining converter. The method comprises injecting a cooling agent into the converter peripherally of the tuyere, where the cooling agent is a liquid up to the tip of the tuyere.

3,817,745
USE OF POLYMERIC COMPLEX FOR RECOVERING METALS

Joseph P. Copes, Easton, Pa., and Donald H. Lorenz, Basking Ridge, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,424
Int. Cl. C07f *1/12;* **C22b** *11/00*
U.S. Cl. 75—108 **10 Claims**

A process for recovering noble metals from a solution containing noble metal ions by treating said solution with a complex of a cross-linked polymeric N-vinylamide and a polyhydroxyaryl compound.

3,817,746
DUCTILE SUPERCONDUCTING ALLOYS

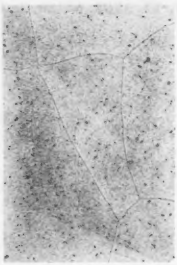
Chang C. Tsuei, Pasadena, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Nov. 14, 1972, Ser. No. 306,510
Int. Cl. C22c *9/00*
U.S. Cl. 75—153 **35 Claims**

This invention provides an alloy for the commercial production of a ductile superconducting wire wherein superconductivity is produced by the proximity effect or by filament or both. In one embodiment a specific alloy of ductile non-superconductor and superconductor components is provided in a composite consisting of Cu and Nb having discrete randomly distributed Nb particles and/or filaments imbedded in and dispersed in close proximity throughout the composite to form an inhomogeneous system of proximately spaced boundaries between the non-superconducting and the superconducting components for effecting the production of continuous superconducting paths throughout the composite at low temperatures in both the superconductor and non-superconductor components. Other ductile elements for the respective compo-

nents, comprise Ag, Au, Al, Ga, Ge, V, Sn, Ti or Si, in combination with each other or various alloys and compounds for use in the commercial production of ductile superconductors in accordance with this invention.

3,817,747
CARBURIZATION RESISTANT HIGH TEMPERATURE ALLOY
Jay Ward Schultz, Suffern, and Russell Lawrence McCarron, Warwick, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.
Filed Apr. 11, 1972, Ser. No. 242,980
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **13 Claims**



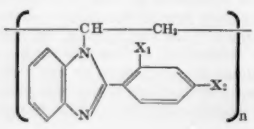
Special heat resistant alloys containing nickel, chromium, iron, titanium, aluminum, silicon and carbon afford high temperature carburization, oxidation and sulfidation resistance, characteristics which render the alloys particularly suitable for use in contact with such media as hydrocarbons, high sulfur content feed stocks and the like.

3,817,748
CONTRAST CONTROL IN ELECTROSTATIC COPYING UTILIZING LIQUID DEVELOPMENT
Gary L. Whittaker, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Jan. 28, 1972, Ser. No. 221,669
Int. Cl. G03g *13/10*
U.S. Cl. 96—1 R **11 Claims**

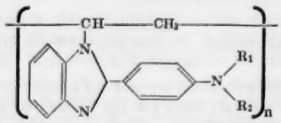
Contrast control in an electrostatic copying process employing polar liquid development is provided by controlling the exposure of an image retention surface in order to establish charged information areas having a total area A'_l, which has a proportion relationship R_l to surrounding buffer areas A'_b. This ratio R_l differs from a proportional relationship R_o existing between information element areas A_l and buffer areas A_b of the objective.

3,817,749
PHOTOCONDUCTIVE SUBSTITUTED POLY (1-VINYL-2-PHENYLBENZIMIDAZOLES)
Makoto Kitahara, Shozo Ishikawa, Tetsuo Arita, and Masaaki Dohi, Tokyo, Japan, assignors to Copyer Co., Ltd., Tokyo, Japan
No Drawing. Filed Dec. 29, 1971, Ser. No. 213,817
Claims priority, application Japan, Dec. 29, 1970, 46/121,153; Aug. 17, 1971, 46/92,444
Int. Cl. C03g *5/06*
U.S. Cl. 96—1.5 **1 Claim**

A poly(1-vinyl-2-phenylbenzimidazole) having the following formula



wherein X_1 and X_2 each represent a hydrogen atom or a halogen atom and n, which shows the polymerization degree, is an integer larger than 1, or a poly[1-vinyl-2-(4'-substituted aminophenyl) benzimidazole] having the following formula



wherein R_1 and R_2 each represent an alkyl group, an aryl group, an aralkyl group, or R_1 and R_2 may form a cyclic amino group or a heterocyclic amino group together with a nitrogen atom has a film-forming property and a high photosensitivity and thus is suitably used as a photosensitive material for electrophotographic photosensitive elements.

3,817,750
METHOD OF PRODUCING A SEMICONDUCTOR DEVICE
Reinhold Kaiser, Heilbronn, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Sept. 22, 1970, Ser. No. 74,274
Claims priority, application Germany, May 5, 1970, P 20 21 922.1
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **9 Claims**

A method of producing a semiconductor device comprises providing a metal layer between an insulating layer and a photosensitive layer or a semiconductor body when providing contact making windows in the insulating layer by etching.

3,817,751
COLOR FORMING AGENTS FOR THE PEROXIDE COLOR INTENSIFYING PROCESS
Reinhart Matejec and Walter Puschel, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Apr. 21, 1972, Ser. No. 246,387
Claims priority, application Germany, Apr. 24, 1971, P 21 20 091.9
Int. Cl. G03c *1/00*
U.S. Cl. 96—48 R **2 Claims**

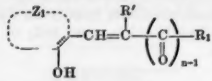
Process for the production of photographic dye images by imagewise decomposition of peroxide compounds in the presence of reactants for a color forming oxidation coupling reactiion wherein the reactants are organic compounds which contain a CN single or double bond and in which the carbon atom is substituted with a hydroxy- or amino-substituted aryl group and the nitrogen atom is substituted with a hydroxy- or amino-substituted aryl group or is a ring member of a heterocyclic saturated or unsaturated 5- or 6-membered ring.

3,817,752
FREE RADICAL PHOTOGRAPHIC SYSTEM CONTAINING A PYRYLIUM DYE FORMER
Urbain Leopold Laridon, Wilrijk, and Jozef Willy Van den Houte, Berchem, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium
No Drawing. Filed Sept. 13, 1972, Ser. No. 288,780
Claims priority, application Great Britain, Sept. 14, 1971, 42,802/71
Int. Cl. G03c *1/52, 5/24*
U.S. Cl. 96—48 R **18 Claims**

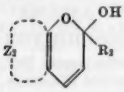
A photographic process, wherein a visible image is formed by image-wise exposure to active electromagnetic radiation of a recording material which comprises in intimate admixture:

(1) at least one organic polyhalogen compound of which a halogen containing radical can be separated photolytically, and

(2) at least one colour forming compound corresponding to one of the following general formulae:



(I)



(II)

wherein:

R_1 represents an aliphatic group, an aryl group, or represents together with R′ the necessary atoms to close a homocyclic ring,

R′ represents hydrogen, a C_1–C_5 alkyl group, a phenyl group, or a phenoxy group,

Z_1 represents the necessary atoms to close a homocyclic ring or ring system,

Z_2 represents the necessary atoms to close a homocyclic nucleus,

R_2 represents a C_1–C_5 alkyl group, and

n represents 1 or 2.

3,817,753

DEVELOPMENT OF PHOTOGRAPHIC MATERIAL

Jozef Frans Willems, Wilrijk-Antwerp, and Joseph Louis de Munck, Heide-Kalmthout, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

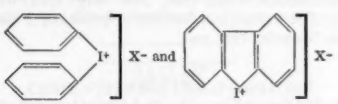
No Drawing. Continuation of abandoned application Ser. No. 573,797, Aug. 22, 1966. This application Sept. 30, 1971, Ser. No. 185,351

Claims priority, application Great Britain, Oct. 7, 1965, 42,591/65

Int. Cl. G03c *1/06, 1/34, 5/30*

U.S. Cl. 96—66.3 **7 Claims**

Iodonium compounds having the formulae



wherein the aromatic nuclei can be substituted and X represents an anion utilized in a photographic silver halide emulsion, increase the rate of development of a developer combination comprising hydroquinone and polyoxyalkylene compounds, extend the development latitude in which screen prints of good quality can be produced within normal developing times, and do not fog the photographic silver halide emulsion.

3,817,754

MICROFICHE CAMERA PROCESSOR

Clyde E. Lefevre, 780 Adele, Orange, Calif. 92667; James P. Hagen, 355 Myrtle Ave., Laguna Beach, Calif. 92651; and Ben H. Owens, 2632 Hillcrest, Orange, Calif. 92667

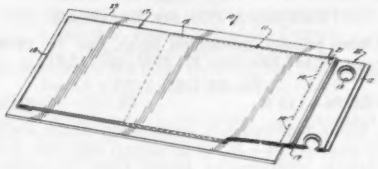
Original application Apr. 19, 1971, Ser. No. 135,180, now Patent No. 3,715,158. Divided and this application Dec. 10, 1971, Ser. No. 204,384

Int. Cl. G03c *1/76, 3/00*

U.S. Cl. 96—67 **5 Claims**

The present invention relates to apparatus for producing a finished microfiche that contains a plurality of microframes of data, arranged in a desired microfiche format. The apparatus uses a single sheet film pack of photographic film; the film pack comprising a protective cover to prevent exposure of the film sheet to ambient light so that the film pack may therefore be handled without fear of premature exposure.

The film pack is inserted into a dark chamber of the disclosed apparatus; and the protective cover is then removed. The photographic film sheet is now optically exposed to produce reduced size images of data to be recorded; an indexing arrangement being used to move the film sheet to various locations in accordance with the desired microfiche format. When the film sheet has had its various areas exposed, it is then processed; and the disclosed apparatus delivers a dry finished microfiche in a few moments.



3,817,755

ANTISTATIC PHOTOGRAPHIC FILM

E. Scudder Mackey, Binghamton, Richard J. Papp, Vestal, and James Waring, Binghamton, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Aug. 10, 1972, Ser. No. 279,665

Int. Cl. G03c *1/82*

U.S. Cl. 96—87 A **11 Claims**

The static susceptibility of film supports, such as photographic motion picture film supports, especially of the aerial type, can be protected against static susceptibility by applying, coating or swabbing an inert film support or the uncoated side of a finished photographic film with a cycloaliphatic amine salt of an alcohol sulfate in which at least one alicyclic radical containing at least five carbon atoms is attached to the amine nitrogen atom and the alcohol radical of the alcohol sulfate has at least five carbon atoms and the compound altogether contains at least sixteen carbon atoms.

3,817,756

MANUFACTURE OF PHOTOGRAPHIC SILVER HALIDE MATERIALS

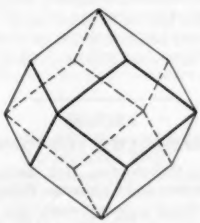
Frans Henri Claes and Marcel Jan Libeer, Mortsel, and Willy Joseph Vanassche, Aartselaar, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed May 9, 1972, Ser. No. 251,650

Claims priority, application Great Britain, May 11, 1971, 14,224/71

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 R **12 Claims**



A photographic material containing silver chloride and/or silver chlorobromide grains that have (110) crystal planes which grains are dispersed in a binder layer. The adsorption of sensitizing dyes on the {110} habit grains is different from that of {100} habit grains.

3,817,757

PHOTOSENSITIVE COMPOSITION COMPRISING CINNAMOYL AND AZIDO GROUPS

Akira Yabe, Yokohama, and Minoru Tsuda and Hideaki Tanaka, Kanagawa, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed July 2, 1971, Ser. No. 159,419

Claims priority, application Japan, Dec. 16, 1970, 45/111,830; Dec. 17, 1970, 45/112,512

Int. Cl. G03c *1/70*

U.S. Cl. 96—115 R **5 Claims**

A highly photosensitive composition which, owing to the synergistic effect of the cinnamoyl and azido groups, two typical photosensitive groups which are present in its main structure, shows a spectral range sensitivity which is expanded to the long wavelength region, this sensitivity having never been obtained with photosensitive compositions hithertofore available.

3,817,758

GOLD ALLOY METALLIZATIONS FOR CAPACITOR ELECTRODES

Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 260,244, June 6, 1972, now Patent No. 3,756,834, which is a continuation-in-part of abandoned application Ser. No. 136,190, Apr. 21, 1971, which is a continuation-in-part of abandoned application Ser. No. 873,055, Oct. 31, 1969, which is a continuation-in-part of abandoned application Ser. No. 705,305, Feb. 14, 1968, which in turn is a continuation-in-part of abandoned application Ser. No. 626,394, Mar. 28, 1967. This application Jan. 22, 1973, Ser. No. 325,624

The portion of the term of the patent subsequent to Sept. 14, 1990, has been disclaimed

Int. Cl. C09d *5/24*

U.S. Cl. 106—1 **4 Claims**

Powder compositions comprising certain ternary alloy particles useful in making ceramic capacitor electrodes and capacitors thereof. The specific alloys are 5–15% platinum, 15–30% palladium and 60–80% gold.

3,817,759

COATING FOR PREVENTING THE FOULING OF SHIPS' PARTS BY MARITIME ORGANISMS

Johann Wessely, Munich, Germany, assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed June 30, 1971, Ser. No. 158,523

Int. Cl. C09d *5/16*

U.S. Cl. 106—15 AF **9 Claims**

This invention relates to a coating composition suitable for preventing the fouling of ships' parts by maritime organisms. The composition consists of polymeric titanium acid esters of aliphatic alcohols, MoS_2, solvents and graphite.

3,817,760

MILDEWCIDE FOR PAINT

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 18, 1973, Ser. No. 352,290

Int. Cl. C09d *5/14*

U.S. Cl. 106—15 AF **11 Claims**

Paints can be made resistant to fungal attack by the incorporation therein of 1-[3-(2-methoxycarbonyl-aminobenzimidazol-1 - ylcarbonylamino) - 4 - methylphenaylcarbamoyl]-2-benzimidazolecarbamic acid, methyl ester, in admixture with a second fungicide or mixture of fupngicides selected from ethylenebis(dithiocarbamic acid), zinc salt, dimethyldithiocarbamic acid, zinc salt; 3,4',5-tribromosalicylanilide; tributyltin fluoride or oxide; 2-mercaptopyridine-N-oxide, zinc salt; or various phenyl mercuric esters.

3,817,761

MILDEWCIDE FOR PAINT

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 18, 1973, Ser. No. 352,291

Int. Cl. C09d *5/14*

U.S. Cl. 106—15 AF **11 Claims**

Paints can be made resistant to fungal attack by the incorporation therein of 2-benzimidazolecarbamic acid, methyl ester in admixture with a second fungicide or mixture of fungicides selected from ethylenebis(dithiocarbamic acid), zinc salt; dimethyldithiocarbamic acid, zinc salt; 3,4',5-tribromosalicylanilide; tributyltin fluoride or oxide; 2-mercaptopyridine-N-oxide, zinc salt; or various phenyl mercuric esters.

3,817,762

MILDEWCIDE FOR PAINT

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 18, 1973, Ser. No. 352,292

Int. Cl. C09d *5/14*

U.S. Cl. 106—15 AF **7 Claims**

Paints can be made resistant to fungal attack by the incorporation therein of 2-(4-thiazoyl)benzimidazole in admixture with a second fungicide or mixture of fungicides selected from ethylenebis(dithiocarbamic acid), zinc salt; dimethyldithiocarbamic acid, zinc salt; 3,4',5-tribromosalicylanilide; tributyltin fluoride or oxide; or 2-mercaptopyridine-N-oxide, zinc salt.

3,817,763

THERMAL SHOCK-RESISTANT CLAY

Clarence M. Smyser, 516 Maple Ave., Harleysville, Pa. 19438

Application June 26, 1970, Ser. No. 50,109, which is a continuation-in-part of abandoned application Ser. No. 726,296, May 3, 1968. Divided and this application Mar. 13, 1972, Ser. No. 234,045

Int. Cl. C04b *33/00, 33/04, 33/24*

U.S. Cl. 106—45 **5 Claims**

A ceramic stoneware or whiteware (porcelain) made of a thermal shock-resistant mix of certain proportions of coarse and fine particles of a lithium mineral petalite or spodumene, with a clay; ball clay and fireclay in the case of stoneware, and kaolin and permissibly ball clay in the case of whiteware. Shapes are fired at 1236 to 1285° C. inclusive (cones 8–10).

3,817,764

FIBERIZABLE FLUORINE-FREE GLASS COMPOSITIONS

Warren W. Wolf, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation

No Drawing. Filed June 27, 1972, Ser. No. 266,823

Int. Cl. C03c *13/00, 3/08*

U.S. Cl. 106—50 **5 Claims**

Glass compositions are disclosed which are useful in making textile glass fibers by a rotary or centrifuging

process. The compositions have the following range of proportions (by weight): SiO_2, 49 to 57%; Al_2O_3, 3 to 5%; B_2O_3, 6 to 12%; Na_2O, 18 to 20%; CaO, 0 to 2%; TiO_2, 9 to 12%; ZrO_2, 0 to 7%; Li_2O, 0 to 1% and Fe_2O_3, 0 to 0.5%.

3,817,765
SINGLE PASS PREREACTED GRAIN AND METHOD OF MAKING

William R. Alder, Fremont, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed June 19, 1972, Ser. No. 264,323
Int. Cl. C04b *35/12*
U.S. Cl. 106—59 **6 Claims**

A fully recrystallized, single pass refractory grain is made by admixing a finely divided MgO-yielding material such as magnesium hydroxide with finely divided low silica chrome ore and firing this admixture, for example in a rotary kiln, without prior compaction, to a temperature of at least 1975° C., the material being exposed to that temperature for at least 10 minutes.

3,817,766
HARDENING OF WATERGLASS SOLUTIONS USING PYROCARBONIC ACID ESTERS AND/OR CARBOXYLIC-CARBONIC ACID ESTER ANHYDRIDES

Wulf von Bonin, Leverkusen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,727
Claims priority, application Germany, Oct. 27, 1971, P 21 53 532.0; Nov. 19, 1971, P 21 57 371.7
Int. Cl. C04b *35/16*
U.S. Cl. 106—75 **14 Claims**

Preferred acidic materials are diethyl pyrocarbonate, benzoic acid-carbonic acid ethyl ester anhydride and (isophthalic acid-carbonic acid ethyl ester) dianhydride. The hardening time can be controlled from a slow set to much shorter periods. Various additives and post-treatments may also be involved.

3,817,767
CEMENTITIOUS COMPOSITIONS

Keith B. Bozer, Crystal Lake, Ill., and Ronald H. Cooper, Clare, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 825,926, May 19, 1969, which is a continuation-in-part of applications Ser. No. 711,790, Mar. 8, 1968, and Ser. No. 761,284, Sept. 30, 1968, which in turn is a continuation-in-part of application Ser. No. 605,569, Dec. 29, 1966, all now abandoned. This application Sept. 14, 1972, Ser. No. 289,006
Int. Cl. C04b *7/02, 7/32, 9/02*
U.S. Cl. 106—90 **7 Claims**

An improved cementitious composition curable by hydration and having enhanced properties, such as less water absorbency and greater strength, comprises a cementitious material and a small but effective amount of alkenyl substituted succinic acid or anhydride.

3,817,768
METHOD OF PREPARING AQUEOUS DISPERSIONS OF FORTIFIED ROSIN

Paul H. Aldrich, Greenville, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 70,470, Sept. 8, 1970. This application Sept. 29, 1972, Ser. No. 293,682
Int. Cl. C08h *11/04, 11/06*
U.S. Cl. 106—238 **4 Claims**

Disclosed is a method of preparing an essentially stable aqueous dispersion of rosin-base material. The method involves homogenizing an unstable aqueous dispersion of rosin-base material, a relatively small amount of which is in the form of a soap, such as the sodium soap, of the rosin-base material, the soap serving as a dispersing agent for the unsaponified rosin-base material. The dispersions are useful in the sizing of paper.

3,817,769
POLYSILOXANE COATING COMPOSITION

Leonard F. Fisher, 7 Dunfries Terrace, San Rafael, Calif. 94901

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,520
Int. Cl. C08h *5/00;* **C08g** *47/02, 51/14*
U.S. Cl. 106—287 SB **9 Claims**

Novel polysiloxane compositions are provided for coating non-porous substrates comprising an alkanolic medium, a small amount of a polysiloxane resin and a surface hardener. The surface hardeners are either phenothiazine dyes or a mild abrasive, either separately or in combination.

3,817,770
CONCRETE COMPOSITION

Bruce E. Dunworth, Baltimore, and Wate T. Bakker, Severna Park, Md., assignors to General Refractories Company, Philadelphia, Pa.

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,922
Int. Cl. C04b *13/22, 31/20, 31/02*
U.S. Cl. 106—315 **4 Claims**

A technique and composition are provided which afford substantial improvement in reducing rebound of gunnable hydraulic concrete compositions. Rebound is reduced for concretes containing calcium aluminate cements from on the order of 25 to 50 weight percent to about 10 to 15 weight percent. Corresponding and similar improvements are attained with other hydraulically settable concretes. The technique and composition comprise adding about 0.05 to 0.3 weight percent of an inorganic salt of an alkali metal ionizable in water and 0 to 2.0 weight percent ball clay to the concrete formulation.

3,817,771
PROCESS FOR PREPARING SYNTHESIS RESIN FILMS OF IMPROVED STIFFNESS

Yujiro Nakayama and Mitsuo Yoshiyasu, Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited and Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo, Tokyo-to, Japan, fractional part interest to each

No Drawing. Filed Aug. 17, 1971, Ser. No. 172,543
Claims priority, application Japan, Aug. 21, 1970, 45/73,228
Int. Cl. B44d *1/32*
U.S. Cl. 117—7 **5 Claims**

Microvoids formed in at least regions near the outer surface of a basic synthetic-resin film and communicating with the outside are filled with a polymerizable monomer, which is then polymerized within the microvoids, whereby the stiffness and other characteristics of the film are improved. The basic synthetic-resin film is preferably a film of a polyolefin, preferably a homo- or copolymer of ethylene, propylene, or butene-1, while the monomer is an ethylenically unsaturated monomer.

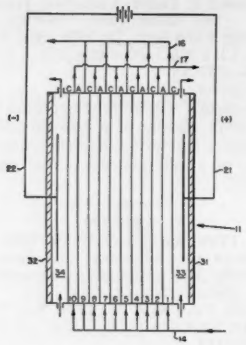
3,817,772
SEMI-PERMEABLE MEMBRANES AND METHOD OF PRODUCTION

Allyn H. Heit, San Mateo, Calif., assignor to Sybron Corporation, Rochester, N.Y.

Continuation of abandoned application Ser. No. 802,025, Feb. 25, 1969. This application Aug. 5, 1971, Ser. No. 169,488
Int. Cl. B44d *1/32*
U.S. Cl. 117—11 **15 Claims**

An improved heterogenous semi-permeable membrane made by the process of forming the membrane from a solution of suitable polymeric binder and an inorganic

salt and lixiviating the film to remove the inorganic salt from the binder matrix. The film prior to lixiviation, may contain up to 80% by weight of the binder of inorganic salt. Suitable ion exchange material may be dispersed throughout the membrane to give permselective characteristics thereto.



Membranes made according to this method exhibit resistance to organic and inorganic fouling and thus may be used at higher current densities. In addition, membranes made according to this method are characterized by relatively low areal resistance.

3,817,773

WOVEN FABRIC PRINTING RIBBON HAVING RUPTURABLE MICROCAPSULES BONDED TO ITS SURFACE

Richard F. Moore and Frederick C. Schiller, Centerville, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Feb. 25, 1970, Ser. No. 14,236

Int. Cl. B41m *5/10*

U.S. Cl. 117—36.1 **5 Claims**

A woven fabric printing ribbon, comprised of individual fibers, having a multiplicity of rupturable microcapsules bonded to its surface by means of a solidified film-forming coacervate polymeric material.

3,817,774

PREPARATION OF PLASTIC SUBSTRATES FOR ELECTROLESS PLATING

John J. Kuzmik, Torrington, Conn., assignor to MacDermid Incorporated, Waterbury, Conn.

No Drawing. Original application Aug. 14, 1969, Ser. No. 850,249, now Patent No. 3,698,919. Divided and this application July 24, 1972, Ser. No. 274,178

Int. Cl. C23c *3/02*

U.S. Cl. 117—47 A **5 Claims**

Plastic substrates, such as ABS, are subjected to a process in which the normally separate cleaning, etching, sensitizing and activating steps are combined into a single operation and the thus-conditioned substrate is then plated electrolessly with a desired metal. The combined cleaning/etching/activating process involves immersing the plastic substrate stock in a solution prepared by admixing a glycol ether and an acid stannous chlorid-palladium hydrosol maintained at a temperature from about 100° to about 175° F.

3,817,775

GLASS FIBER REINFORCED ELASTOMERS

Thomas A. Coakley and James C. Sullivan, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

No Drawing. Filed Dec. 4, 1972, Ser. No. 312,161

Int. Cl. C08f *45/52;* **C03c** *25/02*

U.S. Cl. 117—72 **23 Claims**

A composition for use in the treatment of glass fibers in the form of an aqueous dispersion having solids comprising a resorcinol aldehyde resin, a butadiene-styrene copolymer, a vinyl pyridine terpolymer and a wax and a source of an aldehyde in an amount sufficient to provide a molar ratio of the total aldehyde to resorcinol within the range of 0.60 to 0.95, and glass fibers treated therewith.

3,817,776

GRANULAR FREE-FLOWING MATERIAL FOR USE IN THE MANUFACTURE OF GLASS

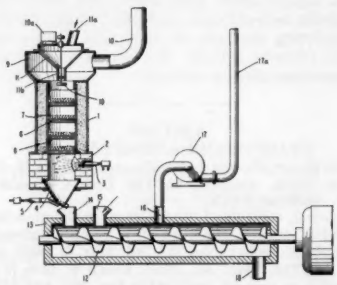
Michel Gringras, Bonel, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Continuation-in-part of application Ser. No. 601,907, Dec. 15, 1966, now Patent No. 3,503,790, dated Mar. 31, 1970. This application Dec. 19, 1969, Ser. No. 886,640 Claims priority, application France, Dec. 27, 1965, 43,817

The portion of the term of the patent subsequent to Mar. 31, 1987, has been disclaimed

Int. Cl. C03c *1/02*

U.S. Cl. 117—100 S **3 Claims**



Granular free-flowing materials comprising grains of sand enrobed in a coating of anhydrous crystalline sodium metasilicate resulting from the heating between 320° and 450° C. of a mixture of silica grains and sodium hydroxide.

3,817,777

SOLID-PHASE SYNTHESIS SUPPORT

Csaba Horvath, Orange, and Seymour R. Lipsky, Woodbridge, Conn., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Dec. 12, 1970, Ser. No. 100,368, now Patent No. 3,725,111, which is a continuation-in-part of abandoned application Ser. No. 14,182, Feb. 25, 1970. Divided and this application Aug. 30, 1972, Ser. No. 284,797

Int. Cl. C03c *17/32*

U.S. Cl. 117—100 S **7 Claims**

A support medium consisting of a highly swellable polymer resin coated on a fluid impervious, shaped core material is described. In specific embodiments, glass beads

are provided with a coating of a highly swellable low-cross linked polymer such as polystyrene. Reactive groups, such as the chloromethyl group, are introduced into the polymer coating. The aforesaid support medium is useful in the solid phase synthesis of complex molecules such as polypeptides, polynucleotides, polysaccharides, proteins, polyamides and the like.

3,817,778

BONDING FIBERS TO RUBBER WITH UNSATURATE-RESORCINOL POLYMERS

Robert Lee Wright, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 159,453, July 2, 1971, which is a continuation-in-part of application Ser. No. 59,720, July 30, 1970, both now abandoned. This application Jan. 26, 1972, Ser. No. 221,089

Int. Cl. B32b *15/02, 27/02;* **B44d** *1/42*

U.S. Cl. 117—128.4 **54 Claims**

Method of enhancing adhesion of fiber to rubber by treating fiber with a saturated resorcinol polymer. The resorcinol polymer comprising alkylene bridged resorcinol units resulting from introducing olefinic unsaturated radicals of 3–10 carbon atoms into the nucleus of the resorcinol.

3,817,779

PROCESS FOR IMPARTING FLAME RETARDANCY TO A TEXTILE

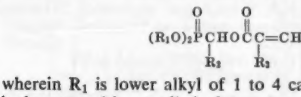
Peter Golborn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 215,192, Jan. 3, 1972. This application Mar. 1, 1972, Ser. No. 230,951

Int. Cl. C09d *1/00*

U.S. Cl. 117—136 **9 Claims**

Normally flammable textiles are rendered flame retardant by the intimate association therewith of a flame retarding amount of a compound of the formula



wherein R_1 is lower alkyl of 1 to 4 carbon atoms, R_2 is hydrogen and lower alkyl of 1 to 4 carbon atoms and R_3 is hydrogen and lower alkyl of 1 to 4 carbon atoms.

3,817,780

CELLOPHANE HAVING A SUBSTANTIALLY HAZE-FREE COATING OF THE DRIED RESIDUE FROM AN ORGANIC SOLUTION OF A VINYLIDENE CHLORIDE POLYMER OF NARROW COMPOSITIONAL RANGE

Paul E. Hinkamp, Midland, and Duane F. Foye, Merrill, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Apr. 11, 1972, Ser. No. 243,092. Divided and this application Mar. 2, 1973, Ser. No. 337,726

Int. Cl. C08d *13/16*

U.S. Cl. 117—145 **1 Claim**

This invention is directed to coated articles comprising essentially a cellophane substrate having as a coating on at least one surface thereof a substantially haze-free coating consisting of the dried residue of an organic solution of a vinylidene chloride interpolymer of from about 88 to 93 mole percent vinylidene chloride and about 12 to 7 mole percent of a mixture of acrylonitrile and methyl methacrylate said mixture consisting of a molar ratio of acrylonitrile to methyl methacrylate of from about 1:1 to 4:1, said interpolymer being soluble in a solvent mixture composed of 65 parts by weight tetrahydrofuran and 35 parts by weight toluene at a temperature of from about 25° C. to 46° C.

3,817,781

CERAMIC TREATING PROCESS AND PRODUCT PRODUCED THEREBY

Peter K. Church, Cascade, and Oliver J. Knutson, Colorado Springs, Colo., assignors to Kaman Sciences Corporation, Colorado Springs, Colo.

No Drawing. Original application June 1, 1967, Ser. No. 642,704. Divided and this application Apr. 16, 1970, Ser. No. 33,120

Int. Cl. C04b *35/00*

U.S. Cl. 117—169 **23 Claims**

A new ceramic treatment process and product and, more particularly, a process for treating underfired porous partially vitrified relatively soft machinable refractory ceramic materials to produce hardened dimensionally stable end products at relatively low temperatures and the ceramic materials produced thereby which are suitable for application as bearings for undersea submergence, low temperature bearings for arctic vehicular and machinery applications, precision bearings for space use and liquid metal lubricated systems. The soft ceramics can be machined and shaped in the soft state and hardened by the process of this invention at temperatures well below normal vitrification temperatures with virtually no change in dimensions from the machined untreated ceramic to the treated and hardened end product. Other products produced by the process of this invention produce articles having a very dense surface capable of taking a high polish and other products have resulted in an abrasive or polishing stone having superior qualities to those of the Arkansas stones in respect to both speed of metal removal and degree of polishing or sharpening. In addition, coarser or finer grades are obtainable compared to a single grade of Arkansas stone. Other products produced by this process have negative temperature coefficients becoming very good electrical and heat conductors at high temperatures.

3,817,782

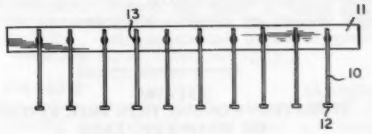
METHOD FOR THE FABRICATION OF MINIATURE ANODES FOR TANTALUM CAPACITORS BY DIPPING IN A VISCOUS SLURRY

Gerhart P. Klein, Manchester, and William F. Vierow, West Acton, Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Jan. 31, 1972, Ser. No. 222,015

Int. Cl. B44d *1/18, 1/34*

U.S. Cl. 117—212 **5 Claims**



A new technique of contacting the ends of film forming metal wire in a slurry of film forming metal powder in a liquid, drying the coating, and sintering the adhering powder to the wire results in anodes suitable for fabrication into capacitors.

3,817,783
ELECTRIC CONDUCTOR

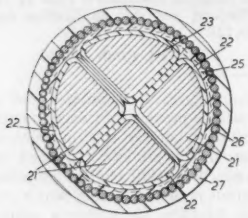
Stefan Verne, London, and Thomas Geoffrey Heggs, Welwyn, England, assignors to British Insulated Callender's Cables Limited, London, England

Original application Sept. 10, 1970, Ser. No. 70,987. Divided and this application June 21, 1972, Ser. No. 264,880

Claims priority, application Great Britain, Sept. 11, 1969, 45,000/69

Int. Cl. B44d *1/34;* **C09c** *1/44*

U.S. Cl. 117—226 **7 Claims**



An electric conductor is provided with an insulating covering of a polymeric composition which comprises a polymerised propylene sequence and a propylene/ethylene copolymer sequence, as a melt index (230° C.; 2.16 kgms.) of 0.01 to 0.5, preferably 0.025 and an ethylene content in the range 10–30% by weight, preferably at least 15% by weight. The invention also includes the insulated electric conductor which is provided with a dielectric screen material which is the polymeric composition containing between 20 and 40% by weight of carbon black.

3,817,784
PROCESS FOR COATING SUBSTRATES WITH COPPER BY THERMAL DECOMPOSITION OF SELECTED FLUOROORGANOCOPPER (I) COMPOUNDS

Allan Cairncross and William Arthur Sheppard, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Dec. 2, 1970, Ser. No. 102,569, now Patent No. 3,700,693, which is a continuation-in-part of application Ser. No. 725,541, Apr. 30, 1968, which in turn is a continuation-in-part of application Ser. No. 557,605, June 15, 1966, both now abandoned. Divided and this application May 9, 1972, Ser. No. 251,655

Int. Cl. B44d *1/02*

U.S. Cl. 117—227 **8 Claims**

A process for copper-coating various substrates and a description of the substrates that are coated. The process comprises selected fluoroorganocopper compositions at preferred temperatures of about −20° C. to 350° C. The copper coatings are electrical conductors and useful, for instance, in printed electrical circuits.

3,817,785
VIBRATION COMPACTION PROCESSING OF MAGNETIC TAPE

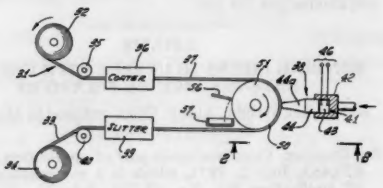
Georges D. Abitboul, Los Angeles, Calif., assignor to Audio Magnetics Corporation, Gardena, Calif.

Continuation of abandoned application Ser. No. 244, Jan. 2, 1970. This application Jan. 12, 1972, Ser. No. 217,240

Int. Cl. H01f *10/00*

U.S. Cl. 117—237 **8 Claims**

The tip of a vibratory head is urged against a magnetic tape consisting of a thin coating of granular magnetizable material on a flexible backer strip; the tip is vibrated to cyclically increase and decrease the loading and thereby compact the coating section in alignment with the tip; and the tape is urged in the direction of its length so



that the coated section is advanced in that direction during time intervals of decreased loading.

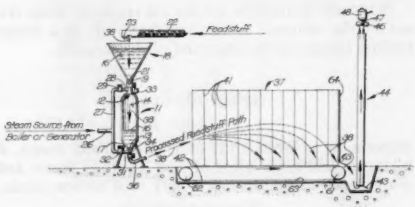
3,817,786
EQUIPMENT FOR CONVERTING THE PHYSICAL AND COMPLEX MOLECULAR BOND STRUCTURES OF NATURAL FEEDSTUFFS FOR RUMINANT ANIMALS TO DIFFERENT AND LESS COMPLEX MOLECULAR BOND STRUCTURES THEREOF

John W. Algeo, Santa Ynez, Calif., assignor to Santa Ynez Research Farm, Santa Ynez, Calif.

Original application Sept. 22, 1967, Ser. No. 674,050, now Patent No. 3,667,961. Divided and this application Sept. 17, 1971, Ser. No. 181,419

Int. Cl. A13k *1/02;* **A23k** *1/14*

U.S. Cl. 127—1 **9 Claims**

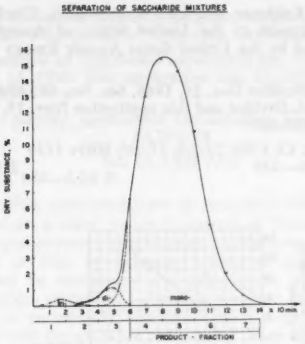


Economical equipment for effecting the conversion of the molecular bond structures of ruminant animal feedstuffs to different less complex molecular bond structures with concomitant degradation of relatively ingestible molecular structures to shorter chain length more digestible carbohydrates; the molecularly rearranged end products having the unique capacity of beneficially stimulating rumen microfloral metabolism to produce increased levels of steam volatile fatty acids having a more beneficial proportion of proprionic and higher molecular weight fatty acids. The equipment comprises a closed pressure vessel into which a quantity of ruminant animal feedstuff is introduced and confined in an area of predetermined size and into which steam under high pressure at high temperature is delivered onto the confined feedstuff to saturate the same, with a restricted outlet through which the confined saturated feedstuff is explosively ejected to ambient pressure and temperature upon the expiration of a predetermined time interval of steam saturation.

3,817,787
METHOD FOR SEPARATING MONOSACCHARIDES FROM MIXTURES INCLUDING DI-, AND HIGHER SACCHARIDES

Ernst Gustav von Hertzen and Carl E. F. Aminoff, Helsinki, Finland, assignors to Suomen Sokeri Osakeyhtio (Finnish Sugar Company), Helsinki, Finland

Filed Jan. 26, 1972, Ser. No. 220,886
Int. Cl. C13d 3/14
U.S. Cl. 127—46 B 15 Claims

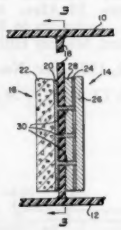


Monosaccharides are separated from saccharide mixtures including di-, tri-, and oligosaccharides by a process which includes the step of ion exclusion utilizing alkali metal and alkaline earth metal salts of polystyrene sulfonate cation exchange resins cross-coupled with di-vinyl benzene using a column height of from about 2.5 to about 5 meters.

3,817,788
BI-POLAR ELECTRODE FOR LEAD-ACID-TYPE ACCUMULATOR

Gunnar C. Eckerbom and Karl T. Rehnberg, Goteborg, Sweden, assignors to Aktiebolaget Tudor, Stockholm, Sweden

Filed Jan. 4, 1972, Ser. No. 215,384
Int. Cl. H01m 39/06
U.S. Cl. 136—10 3 Claims

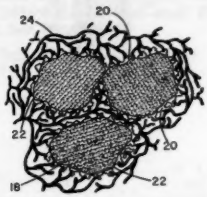


In lead-acid accumulators, a bi-polar electrode which has a support wall of insulating material and two current conductors of large surface areas on opposite sides of the support wall. The two current conductors are connected electrically together by a large number of through connectors which tend to keep the current density throughout the current conductors substantially uniform. Negative active material is on one current conductor and positive active material is on the other current conductor. The electrode is so constructed as to prevent leakage between electrolyte in contact with the negative active material and electrolyte in contact with the positive active material.

3,817,789
COMPRESSED POWDER ELECTRODE

Robert E. Stark, Littleton, and Phillip A. Grossman, Lakewood, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed May 13, 1971, Ser. No. 143,058
Int. Cl. H01m 43/04
U.S. Cl. 136—28 32 Claims



An electrode of the compressed powder type for an electrolytic cell and a process for its manufacture is described, the electrode including (1) an active mass, e.g., nickel hydrate, coated with a porous layer of electrically conductive carbonaceous material, e.g., graphite, (2) and in admixture therewith an electrically conductive material having an arborescent structure, e.g., certain carbonyl metal powders, and (3) a conductive substrate on which a layer of the mixture has been applied under elevated pressure. These electrodes are economically manufactured, and find use in a number of electrolytic cells and are characterized by high discharge capacities and mechanical integrity.

3,817,790
SEALED PRIMARY SODIUM IODINE BATTERY

Stephan P. Mitoff, Elnora, N.Y., assignor to General Electric Company

Filed June 18, 1971, Ser. No. 154,400
Int. Cl. H01m 13/00, 23/02
U.S. Cl. 136—83 4 Claims

A sealed primary sodium-iodine battery is disclosed which comprises a casing, a solid sodium anode positioned in the casing, a solid sodium ion-conductive electrolyte adjacent the anode, and a cathode positioned adjacent the opposite side of the electrolyte, the cathode consisting of solid iodine and iodine contained in a solution of alcohol and sodium iodide.

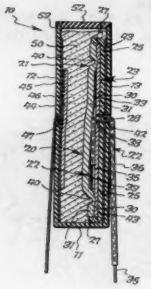
3,817,791
LITHIUM IODINE BATTERY

Wilson Greatbatch, Clarence, and Ralph T. Mead, Kenmore, N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Filed Jan. 31, 1973, Ser. No. 328,313
Int. Cl. H01m 43/00
U.S. Cl. 136—83 R 24 Claims

A lithium-iodine cell comprising a casing, a cathode of iodine-containing material within the casing, a cathode current collector positioned in the casing in contact with the cathode material and connected to an electrical conductor which extends through the casing, and an anode assembly comprising a lithium member having a surface exposed to the cathode material, an anode current collector contacting the lithium member, and means holding the lithium member and anode current collector in the casing in a manner sealing the connection of the current

collector to the lithium member from exposure to the iodine-containing material. An insulated electrical conductor connected to the anode current collector extends through the holding means and the casing. The holding means is of a material which does not exhibit electronic



conduction when exposed to iodine. The anode assembly preferably comprises a pair of lithium members bonded together and against the current collector in a manner sealing the same and a holding means of frame member surrounding the peripheral edges of the lithium members in a manner sealing the edges.

3,817,792

ARRANGEMENT OF A FUEL CELL BATTERY

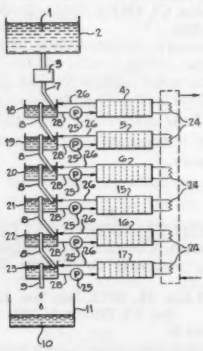
Dieter Spahrbier, Frankfurt-Rodelheim, Germany, assignor to Varta Batterie Aktiengesellschaft

Filed Mar. 27, 1972, Ser. No. 238,501

Claims priority, application Germany, Mar. 30, 1971, P 21 15 310.6

Int. Cl. H01m *27/12, 31/00*

U.S. Cl. 136—86 C **5 Claims**



A fuel cell battery comprised of a plurality of separate battery units or elements, coordinated to each battery unit a unit storage tank for liquid fuel-electrolyte mixture and a forwarding system for the circulation of fuel-electrolyte mixture coordinated to each battery unit and unit storage tank combination.

All unit storage tanks are arranged separately of each other, such as in vertically stacked fashion, and connected by overflow tubes to permit cascading of the liquid fuel-electrolyte mixture successively through the unit storage tanks by gravity. Fresh fuel-electrolyte mixture is fed from a feed tank by a metering device to the uppermost of the unit storage tanks.

3,817,793

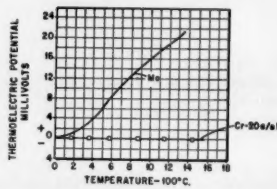
HIGH TEMPERATURE THERMOCOUPLE ALLOY SYSTEMS

William C. Kuhlman and Carl S. Wukusick, Cincinnati, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission

Original application Dec. 21, 1966, Ser. No. 603,694, now abandoned. Divided and this application Nov. 19, 1968, Ser. No. 802,303

Int. Cl. C22c *23/00, 27/00;* **H01v** *1/14*

U.S. Cl. 136—236 **1 Claim**



This invention relates to a thermocouple system capable of delivering a substantially linear EMF response as a function of temperature up to 1800° C. in a thermal neutron environment comprising a negative leg consisting of a chromium-base binary alloy having sufficient ductility to be drawn into wire form, said alloy selected from 15–25 atom percent ruthenium, 15–20 atom percent osmium, and the balance chromium, and a positive leg.

3,817,794

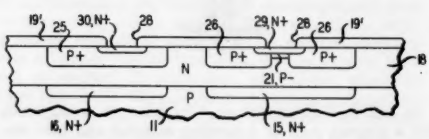
METHOD FOR MAKING HIGH-GAIN TRANSISTORS

William Edgar Beadle, Wilshire, and Milton Luther Embree, Larry Gene McAfee, and Stanley Floyd Moyer, Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 2, 1971, Ser. No. 168,034

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **6 Claims**



A high-gain, low-noise, high-frequency transistor is made simultaneously with a conventional transistor on a common substrate. A low conductivity base region is first diffused into only a high-gain transistor portion. A high conductivity region diffused into both transistors con-

stitutes the active base region for the conventional transistor and ohmic base contacts for the high-gain transistor; the ohmic contacts also delimit the extent of the high-gain transistor active base region.

3,817,795

PROCESS FOR TREATING A METAL OR ALLOY BY MEANS OF AN ELECTROLYTE

Marcel Pourbaix, Brussels, Belgium, assignor to Centre Belge d'Etude de la Corrosion, Ixelles, Belgium

Continuation of abandoned application Ser. No. 791,333, Jan. 15, 1969. This application Jan. 12, 1972, Ser. No. 217,231

Claims priority, application Luxembourg, Jan. 16, 1968, 55,296/68

Int. Cl. C23f 7/04

U.S. Cl. 148—6.14 R **10 Claims**

A patina, passivated layer or protective skin is rapidly formed on a metal which is capable of forming such a layer upon exposure to atmospheric conditions over a long period of time by alternate actions of an electrolyte followed by desiccation and dehydration in a gaseous atmosphere wherein the electrode potential of the treated metal is periodically measured, these steps being continued until the electrode potential of the metal compared to a saturated calomel electrode is stabilized at a value which is higher than 0 $mv_{.sce}$ in the presence of water.

3,817,796

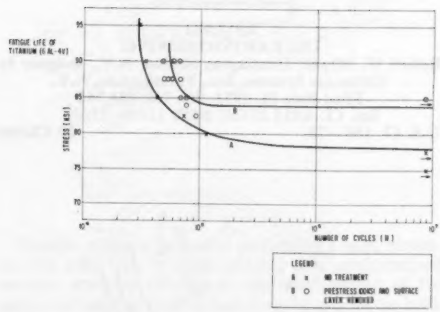
METHOD OF INCREASING THE FATIGUE RESISTANCE AND CREEP RESISTANCE OF METALS AND METAL BODY FORMED THEREBY

Irvin R. Kramer, Denver, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 51,232, June 30, 1970. This application Mar. 9, 1972, Ser. No. 233,183

Int. Cl. C22f 1/04, 1/18

U.S. Cl. 148—11.5 R **16 Claims**



The fatigue and creep resistance of a metal body is substantially increased by first prestressing the metal body in non-cold worked condition at or below the proportional limit but at a stress value which is greater than the stress value to which the metal body is to be subjected during normal usage, and then either relaxing the surface layer of the body or reducing the thickness of the body by a predetermined amount.

3,817,797

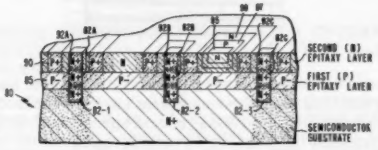
CONSTRUCTION OF MONOLITHIC CHIP AND METHOD OF DISTRIBUTING POWER THEREIN FOR INDIVIDAUL ELECTRONIC DEVICES CONSTRUCTED THEREON

Jack L. Langdon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Original application May 12, 1969, Ser. No. 823,662, now Patent No. 3,656,028. Divided and this application Feb. 14, 1972, Ser. No. 226,347

Int. Cl. H01l 7/36, 19/00

U.S. Cl. 148—175 **4 Claims**



To eliminate parasitic voltage drops to electrodes of semiconductor devices built on a semiconductor chip or wafer, due to the use of an element of a voltage and current supply conductor in common for several such semiconductor devices, a separate path is diffused for each electrode, onto such chip or wafer as a built-up post of the basic semiconductor material of the chip or wafer, and the back surface of the chip or wafer is used as a relatively wide area surface as a voltage supply bus, which may also be connected to a metal base for the double purpose of establishing that surface at some selected known potential and providing a good heat sink for the chip or wafer. Generally, the potential of the metal base may be placed at ground, but need not be.

3,817,798

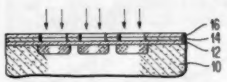
METHOD OF FORMING INTEGRATED SEMICONDUCTOR DEVICES WITH III–V COMPOUNDS

William N. Jacobus, Jr., Essex Junction, Vt., and San-Mei Ku, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1971, Ser. No. 200,438

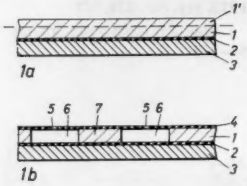
Int. Cl. H01l 7/44

U.S. Cl. 148—187 **12 Claims**



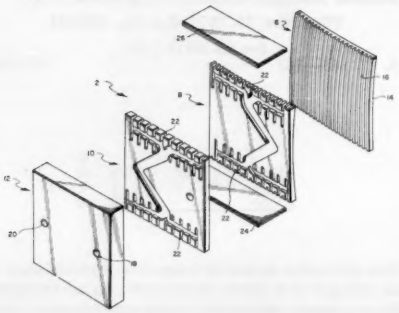
The disclosure relates to integrated semiconductor devices formed with III–V compounds. As an example, a gallium arsenide substrate is coated with a layer of silicon dioxide prior to the application of a masking layer of silicon nitride. The silicon dioxide layer passes the zinc diffusant but prevents lateral diffusion spikes. This process is particularly useful for forming an array of closely spaced light emitting diodes.

3,817,799
PRODUCTION OF CIRCUIT DEVICE
Hans-Jurgen Schutze and Klaus Hennings, Ulm (Danube), Germany, assignors to Telefunken Patentverwertungsgesellschaft G.m.b.H., Frankfurt am Main, Germany
Original application Aug. 2, 1965, Ser. No. 476,536, now Patent No. 3,689,992. Divided and this application Feb. 14, 1972, Ser. No. 226,350
Claims priority, application Germany, Aug. 8, 1964, T 26,759; Oct. 3, 1964, T 27,136; Nov. 14, 1964, T 27,418
Int. Cl. H01l 7/50
U.S. Cl. 156—3 6 Claims



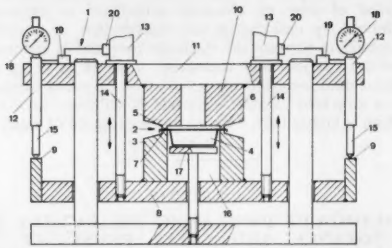
A solid state circuit arrangement having a semiconductor member and presenting reduced shunt capacitances as the result of the isolation of various regions of the member from each other, and a method for fabricating such arrangement by forming a subassembly of two members, constituted by a first insulating layer and the semiconductor member, by depositing one of the members on the surface of the other thereof, depositing a second insulating layer on the side of the semiconductor member which is opposite from the surface upon which the first layer bears, forming apertures in at least one of the insulating layers to expose surface portions of the semiconductor member, and etching out the portions of the semiconductor member in the region of each aperture to create cavities which extend from one of the insulating layers to the other.

3,817,800
METHOD OF THERMALLY COMPENSATING OPTICAL MIRRORS
Charlton Dunn III, Chatsworth, Ronald D. Tobin, Newbury Park, and Neil E. Bergstreser, Canoga Park, Calif., assignors to North American Rockwell Corporation
Filed July 3, 1972, Ser. No. 268,288
Int. Cl. G02b 5/08
U.S. Cl. 156—64 4 Claims



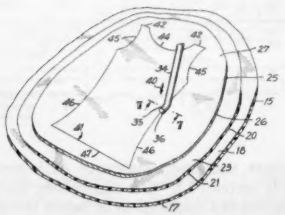
A method of thermally compensating a mirror comprising the steps of forming a laminated mirror structure having a reflective front surface, a rear surface defining a coolant outlet, a plurality of intermediate plates defining coolant distribution passageways for circulating coolant fluid in heat exchanging relation with said reflective surface and establishing a minimum temperature plane within said structure extending parallel to said surfaces, and coolant inlet means for deliverying coolant fluid to said distribution passageways; determining the thermal distribution through said structure to determine the location of the neutral plane of said structure; and adjusting said structure to balance the thermal moments about said neutral plane.

3,817,801
METHOD AND DEVICE FOR SEALING OF CONTAINERS OR PACKAGES COVERED WITH HEAT-SEALABLE FOIL
Karl Widmer, Zurich, Switzerland, assignor to Swiss Aluminium Ltd., Chipps, Switzerland
Filed June 13, 1972, Ser. No. 262,246
Claims priority, application Switzerland, June 15, 1971, 8,695/71
Int. Cl. B29c 27/02
U.S. Cl. 156—69 1 Claim



Method and device for sealing of containers or packages covered with heat sealable foil by welding of plastics layers under simultaneous employment of pressure and heat, whereby for sufficiently, tight sealing during the pressing and welding operation a measurement of the thickness of the two layers welded together, and an interpretation of the measurement results for control of the welding operation, takes place. The device for carrying out the method consists in a welding and pressure device for sealing of containers is in operative connection with a measuring, controlling, and adjusting device.

3,817,802
ULTRASONIC SEWING
Robert W. Meyer, Huntington Station, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.
Filed June 21, 1971, Ser. No. 154,755
Int. Cl. A41d 27/00; B32b 31/00, 31/16
U.S. Cl. 156—73 29 Claims



This invention relates to the fabrication of articles from generally thermoplastic sheet material using ultrasonic

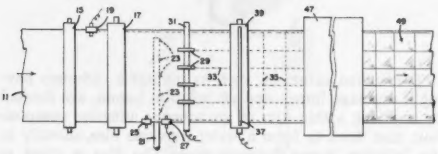
energy and other procedures such that a pattern of the shape that the article is to take is initially welded with the welding of the two or more sheets comprising the article and the sheets do not have to be first cut to the shape of the article to be formed. The pattern is then removed at its welded joint with the sheets. If desired the pattern and sheets of material are simultaneously cut and welded with the pattern thereafter removed, kits and their method of assembly are also disclosed.

3,817,803

METHOD OF MAKING A CELLULAR CUSHIONING STRUCTURE

Eugene G. Horsky, Claymont, Del., assignor to FMC Corporation, Philadelphia, Pa.

Filed June 19, 1972, Ser. No. 264,231
Int. Cl. B29c *24/00*
U.S. Cl. 156—85 **11 Claims**



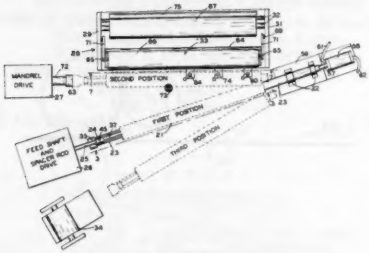
A method of making a cellular cushioning structure having a plurality of spaced, hermetically sealed, pillow-shaped pockets within each of which is entrapped a fluid under pressure.

3,817,804

METHOD AND APPARATUS FOR FABRICATING FLEXIBLE TUBING

James William Helmick, Toledo, Brownell Wesley Goebel, Waterville, and John Marvin Current, Jerry City, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Original application June 6, 1969, Ser. No. 842,766, now Patent No. 3,682,746. Divided and this application Mar. 27, 1972, Ser. No. 238,689
Int. Cl. B31c *13/00*
U.S. Cl. 156—144 **4 Claims**



Flexible tubing is formed by preforming a helix, mounting the helix with its turns oriented in a predetermined manner, applying adhesive to the outer surface of the turns, and winding flexible sheet material around the helix to form an envelope over the helix skeleton. A multiplicity of layers of sheet material can be applied. In fabricating a circular duct, a helix of material of fixed cross-section is supported by a mandrel contacting the turns at spaced points as longitudinal bars spaced 120°. Adhesive is applied by an applicator contacting the outer face of the helix turns with a wiping or rolling contact through rotation of the mandrel or the applicator or both. A broad contact area, as afforded by a flattened outer face on each helix turn, sustains sufficient adhesive to penetrate superposed regions of an overlying thin, porous, flexible sheet wound on the helix and adhesively bond another layer of material wound thereover. Insulated tubing can have a plurality of wound layers of insulation in continuous sheet form with the single application of adhesive to bond substrate and at least the first layer of insulation to the helical skeleton and a jacket to retain the outer layers.

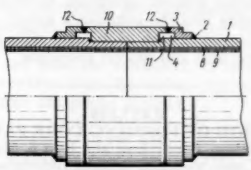
Tubing is produced on a multistation apparatus. A composite spacer rod and expandable mandrel shaft has a pivoted mounting end and an opposite end selectively coupled to a first station comprising a helix magazine and a spacer rod drive, to a second station comprising a mandrel drive and to a third station for packeting the assembled duct and unloading it from the mandrel shaft. A rack sustaining roll goods and the adhesive applicator for cooperative manipulation relative to the mandrel mounted helix is located at the second station.

3,817,805

METHOD OF JOINTING PIPES WITH INTERNAL HEAT-SENSITIVE COATING AND JOINT BASED ON SAID METHOD

Leonid Stepanovich Surikov, ulitsa Krupskoi 8, korpus 1, kv. 173, Moscow, U.S.S.R.; Alexei Pavlovich Kokonin, ulitsa Schorsa 2, kv. 18, Bykovo Moskovskoi oblasti, U.S.S.R.; and Georgy Nikolaevich Klebanov, ulitsa Krasikova 7/43, korpus 3, kv. 91; Jury Mikhailovich Isaenko, Anadyrsky proezd 13, kv. 14; Ivan Yakovlevich Degtyarev, Kutuzovsky prospekt 24, kv. 58; and Tatiana Leonidovna Roslyakova, ulitsa Krupskoi 8, korpus 1, kv. 173, all of Moscow, U.S.S.R.

Filed Nov. 26, 1971, Ser. No. 202,508
Int. Cl. B65h *69/02*
U.S. Cl. 156—158 **1 Claim**



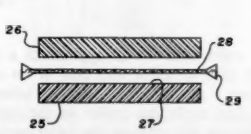
Pipes with internal heat-sensitive coating are jointed by welding their connecting elements and leaving an air space between the welded seam and the external surface of the pipes being jointed.

3,817,806

METHOD FOR PRESTRESSING REINFORCED THERMOSET RESINS

Travis H. Anderson, Hayward, and Harvey H. Anderson, Superior, Wis., assignors to Acryltech, Incorporated, St. Paul, Minn.

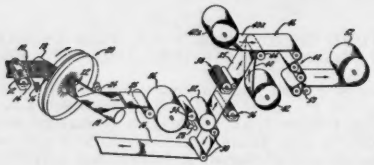
Filed June 1, 1972, Ser. No. 258,540
Int. Cl. B29c *17/00;* **B32b** *31/12*
U.S. Cl. 156—161 **9 Claims**



A method for prestressing reinforced thermosetting resins which includes initially aligning fibrous materials, ten-

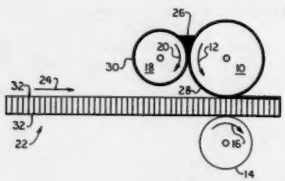
sioning the same, holding this tension while encapsulating the fibrous material with a thermosetting resin and utilizing low pressure means to force the resin to go around and completely encapsulate the fibrous material and in addition to provide laminated structures wherein the aligned and tensioned fibrous material is bonded to a formable sheet of plastic material and the thermosetting resin encapsulates the fibrous material and bonds the same to the sheet material.

3,817,807
PROCESS FOR MAKING NONWOVEN SCRIMS
Ralph V. Braun and Jerome L. Schwoerer, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 7, 1972, Ser. No. 242,104
Int. Cl. D04h 3/12
U.S. Cl. 156—181 **6 Claims**



A process for forming nonwoven scrims in which an adhesively bonded scrim positioned on a carrier belt is brought into contact with an arcuate, release surface heated to a temperature generally in the range of 200° F. to 400° F. and separating the carrier and scrim from the surface after the adhesive has reached its elastomeric point. Separation without significant buildup is achieved by incorporating into the adhesive a minor amount of a selected release agent such as mineral oil, a paraffin wax emulsion, oleic acid and dioctyl phthalate.

3,817,808
METHOD OF FORMING CORE PANELS
Charles R. Ronan, Santa Ana, and Earl S. Stevens, Riverside, Calif., assignors to Rohr Industries, Inc.
Continuation of abandoned application Ser. No. 861,734, Sept. 29, 1969. This application May 1, 1972, Ser. No. 249,432
Int. Cl. B32b 7/14
U.S. Cl. 156—291 **2 Claims**

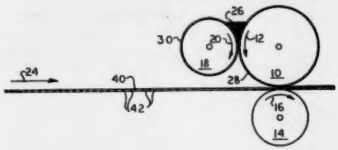


A bar of solid adhesive is applied to a hot roller to thereby melt said adhesive and coat it on an applicator roller and then a portion of this melted adhesive is transferred from the applicator roller to the faying edges of a honeycomb core by pressing the latter against the applicator roller and moving the core and the applicator roller relative to each other. A facing sheet is subsequently held against the coated faying edges of the core while the adhesive is cured, thereby bonding the core to the facing sheet.

3,817,809
BARE WIRE PROCESS FOR MAKING RETENTION CATHETERS
Paul Dereniuk, North Smithfield, R.I., assignor to International Paper Company, Inc., New York, N.Y.
Filed Mar. 20, 1972, Ser. No. 236,490
Int. Cl. B32b 1/08
U.S. Cl. 156—296 **10 Claims**

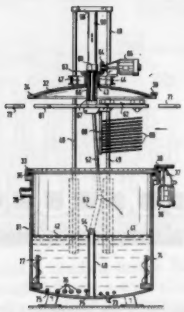
Two-lumen catheters, such as inflatable catheters having a drainage lumen and an inflation lumen, are formed by applying a thin film of an aqueous adhesive composition, that dries to form a water pervious film, directly to the inflation lumen forming wire. The film is dried to form a water pervious, thin, tacky tubular member on the inflation lumen forming wire. The tubular member is then pressed into adhering, parallel, abutting contact with a latex tubular member previously formed on the drainage lumen forming rod. Subsequently, the conventional two-lumen catheter forming operations including coating the joined tubular members with rubber to build up a smooth exterior surface are followed.

3,817,810
METHOD OF FORMING CORE PANELS
Charles R. Ronan, Santa Ana, and Earl S. Stevens, Riverside, Calif., assignors to Rohr Industries, Inc.
Continuation of application Ser. No. 15,349, Mar. 2, 1970, which is a continuation-in-part of application Ser. No. 861,734, Sept. 29, 1969, both now abandoned. This application May 1, 1972, Ser. No. 251,532
Int. Cl. B31d 3/02
U.S. Cl. 156—297 **1 Claim**



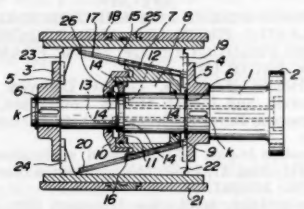
A bar of solid adhesive is applied to a hot roller to thereby melt said adhesive and coat it on an applicator roller. Faying edges of honeycomb core material are contacted with adhesive coated applicator roller to transfer adhesive to said edges, which are then held against a facing sheet while adhesive is cured to thereby bond the core and sheet together. Applicator roller can also be used to coat a perforated facing sheet, without clogging the holes in the sheet when proper conditions are maintained, and the adhesive thus applied to said sheet can be cured while faying edges of honeycomb core material are held thereagainst.

3,817,811
AUTOCLAVE FOR GLASS LAMINATES
Friedrich Halberschmidt, Merkstein, Karl-Heinz Linberg, Horbach, Paul Roentgen, Bietigheim, and Hans Steffens, Aachen, Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France
Filed Aug. 20, 1971, Ser. No. 173,413
Claims priority, application France, Aug. 24, 1970, 7030846; Oct. 23, 1970, 7038319
Int. Cl. B32b *31/20*
U.S. Cl. 156—382 3 Claims



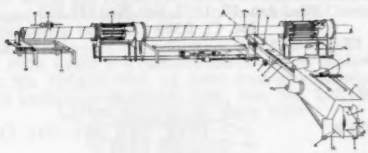
A method of adhesively interconnecting a stack of sheets which can be thermally conjoined at their proximate faces which comprises immersing the stack in a hot liquid bath for a time and at a temperature at which the sheets adhere, removing the conjoined stack from the hot liquid, immersing the stack in a cold liquid bath at rigidifying temperature, and removing the rigid stack from the cold liquid. The objects as to apparatus are accomplished by apparatus for the thermal treatment with pressure of objects which comprises a plurality of tanks, means to heat the tanks to different temperatures, means to put an object into one said tank, means to transfer the object to another said tank, and pneumatic means to impose liquid pressure upon the object within a said tank.

3,817,812
DRUM FOR BUILDING GREEN TIRES
Toshinori Yabe, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan
Filed May 2, 1972, Ser. No. 249,557
Claims priority, application Japan, May 11, 1971, 46/30,831
Int. Cl. B29h *17/16*
U.S. Cl. 156—415 2 Claims



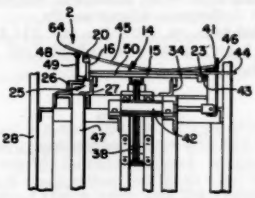
A drum for building green tires is provided whereby various kinds of green cases having different diameters may be built by a mere replacement of segments in a simple and rapid manner. The replacement of segments is simplified by providing a sliding ridge-groove connection between the segments and a wedge-like cylinder. The wedge-like cylinder is reciprocated by a pressure fluid to expand and contract the segments.

3,817,813
PRODUCTION OF COMPOSITE STRUCTURES
Donald George Keith, Mount Eliza, Victoria, Australia, Douglas Barrett Morris, Manley, England, Horst Egon Fred Ludwig Maack, Horgen, Switzerland, and Ernest Arthur Mason, Frosham, and Robert John Woolgar, Northwich, England, assignors to Imperial Chemical Industries Limited, London, England
Original application Feb. 22, 1971, Ser. No. 117,457, now Patent No. 3,778,322. Divided and this application May 12, 1972, Ser. No. 252,728
Claims priority, application Great Britain, Feb. 23, 1970, 8,478/70
Int. Cl. B31c *3/00*
U.S. Cl. 156—429 12 Claims



An improved device for helically and spirally winding a flexible ribbon about a tubular workpiece. Means are provided for moving the workpiece about its longitudinal axis while rotating about the horizontal axis simultaneously. A foam like filler material is provided between the workpiece and the spirally wound ribbon forming a sheath. The foam like material is introduced onto the spiral ribbon by way of nozzles. Vacuum means are provided on the underneath side of endless belt conveying the ribbon to be coated with foam. The ribbon with foam is tangentially fed onto the workpiece. A second drive assembly is provided after the ribbon applying station to propel the thus composite product.

3,817,814
INDEXING APPARATUS
George W. Loy, Scio, Ohio, assignor to Scio Cabinet, Inc., Scio, Ohio
Application Feb. 10, 1971, Ser. No. 114,290, now Patent No. 3,690,995, which is a division of application Ser. No. 885,014, Dec. 15, 1969, now Patent No. 3,580,787. Divided and this application July 7, 1972, Ser. No. 269,609
Int. Cl. B32b *31/00*
U.S. Cl. 156—556 10 Claims



A plastic laminating apparatus for laminating plastic sheet material to a countertop core having a backsplash attached at right angles thereto during a single pass through the apparatus. The apparatus consists of a plurality of longitudinally spaced work stations through which

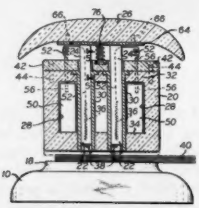
the work is successively moved for progressively shaping and adhering the plastic laminate to the work, such work being guided through the apparatus by receipt of a downwardly projecting portion from the work in a guide track extending the entire length of the apparatus. A back die bends the laminate to conform to the general shape of the backsplash and countertop after heating, and fingers and pressure rolls are used to progressively bend and press the projecting edges of the laminate into firm contact with the edges of the countertop and backsplash. Floating cutters are also used to trim the excess laminate material extending beyond the countertop and backsplash edges and such excess material may be picked up by a suction blower or removed by a rotary brush prior to passage through final pressure rolls.

3,817,815

WELDING APPARATUS FOR PAPER

Bernard T. Sendor, 608 Blair Drive, Westbury, N.Y. 11590, and Mortimer S. Sendor, 80—30 221st St., Queens Village, N.Y. 11427

Filed Jan. 27, 1972, Ser. No. 221,313
Int. Cl. B30b *15/34*
U.S. Cl. 156—583 **9 Claims**



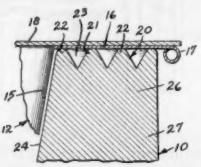
The invention relates to apparatus for welding sheets of paper together by applying energy to the sheets to weld them together when in contact with one another. The apparatus is used with special paper that bonds together when subjected to heat and this apparatus applies heat to selected areas in place of a stapling machine. Temperature of the heating elements is controlled to prevent scorching of the paper and the heating elements retract after each operation to locations which make it impossible for the operator of the apparatus to be burned accidentally by touching the heating elements. The welder can be used for welding individual sheets together along an edge thereof to make a booklet from pre-cut or folded sheets.

3,817,816

RESTRICTED THERMO FLOW HEAT SEAL NEST FOR CONTAINERS

William E. R. Watt, Barto, Pa., assignor to Impaco, Allentown, Pa.

Filed Mar. 14, 1972, Ser. No. 234,525
Int. Cl. B30b *15/34*; B65b *7/06*
U.S. Cl. 156—583 **5 Claims**



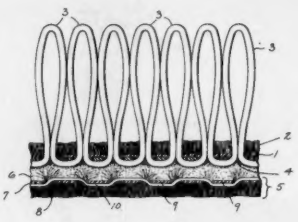
A heat sealing nest for containers that includes a reduced supporting surface area in the form of teeth or ridges or serrations, for controlling the transfer of heat from a sealing platen through a cover and container to the actual nest.

3,817,817

NEEDLEBONDED SECONDARY BACKING FOR CARPETING

Robert C. Pickens, Jr., Louis D. Martino, and Richard Kimmel, Libertyville, Ill., assignors to Ozite Corporation, Libertyville, Ill.

Filed June 22, 1972, Ser. No. 265,420
Int. Cl. D05c *17/02*
U.S. Cl. 161—67 **2 Claims**



A secondary backing for carpeting comprises a woven synthetic scrim with a layer of staple fibers needled onto its bottom surface with portions of the fibers projecting through the top surface. The resulting product has a pleasing appearance and hand, is durable, versatile and relatively inexpensive, and may easily be adhered to the carpet proper.

3,817,818

FABRIC

Harry Riding, Rawtenstall, William Brian Carlyle, Morecambe, and Edgar Morris, Gregory Fold, Helmshaw, England, assignors to The Rossendale Combining Company Limited, Newhallhey Shed, Rawtenstall, Lancashire, England

No Drawing. Filed June 19, 1972, Ser. No. 264,088
Claims priority, application Great Britain, June 17, 1971, 28,361/71
Int. Cl. B32b *3/26, 5/18*
U.S. Cl. 161—89 **9 Claims**

A composite textile fabric having waterproof properties comprises a layer of textile material bonded to one side of a layer of polyurethane foam, the other side of the foam layer being bonded to one side of a layer of polyurethane film material which is impermeable to water, the other side of the film layer being bonded to a second layer of polyurethane foam.

3,817,819

FIBROUS INSERT FOR REINFORCING FOAM PLASTIC PRODUCTS AND PROCESS FOR THE PRODUCTION OF THESE FOAM PLASTIC PRODUCTS

Peter Hoppe, Troisdorf, Gustav Drouven, Bensberg-Moitzfeld, and Johann Muller, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

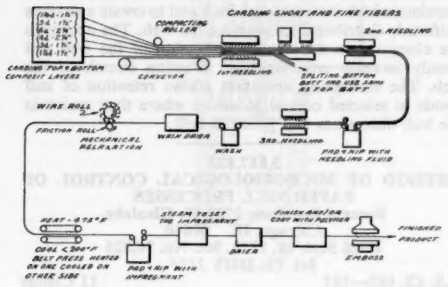
Continuation-in-part of abandoned application Ser. No. 853,425, Aug. 27, 1969. This application Nov. 26, 1971, Ser. No. 202,197
Claims priority, application Germany, Oct. 18, 1968, P 18 03 790.6
Int. Cl. B32b *3/14*
U.S. Cl. 161—140 **2 Claims**

Crash pads or the like essentially composed of a polymeric foam material and randomly disposed therethrough a nonwoven fabric of substantially continuous filaments.

3,817,820
NEEDLED TEXTILE FABRIC

Alexander M. Smith II, Elkin, N.C., assignor to The Fiberwoven Corporation, Elkin, N.C.

Filed Jan. 28, 1972, Ser. No. 221,614
Int. Cl. B32b 5/06
U.S. Cl. 161—154 87 Claims



There is provided a needled textile fabric having high bulk density, entangled fibers, a controlled axis of flexure and a bulk density gradient increasing from the back surface to the face surface thereof. The products are made by needling layers of fibers having a needle pick-up gradient gradient into a dense structure, with a bulk density gradient. The needled fabric is finished with conventional leather and/or textile finishes. The fabric is suitable for use as an artificial leather.

3,817,821
LAMINAR PACKAGING FILM

John B. Gallini, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 8, 1972, Ser. No. 304,597
Int. Cl. B65d 65/40, 75/12; B32b 27/08
U.S. Cl. 161—165 5 Claims

A laminar, sealable, packaging material of at least three layers comprising a blend of ethylene/vinyl acetate copolymer with a second ethylene/vinyl acetate copolymer or polybutene-1; a high density polyethylene; and a blend of high density polyethylene and ethylene vinyl acetate, the layers being bonded together in the order specified. Also provided are packages prepared from the laminar structure.

3,817,822
FIRE-RETARDANT PLYWOOD

David Haddon Dawes, Westbrook, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada

No Drawing. Filed Jan. 22, 1973, Ser. No. 325,621
Int. Cl. B32b 27/10
U.S. Cl. 161—165 13 Claims

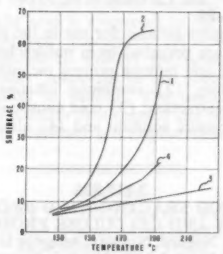
A process is disclosed for producing a fire-retardant plywood which comprises at least two plies of wood sheet impregnated with a fire-retardant salt, the plies being bonded together with a polyethylene film cross-linked with an organic peroxide. The process comprises the steps of:

(1) impregnating plies of wood sheet with an aqueous solution of a fire-retardant salt;
(2) drying the salt impregnated plies of wood sheet;
(3) placing between the plies of salt impregnated wood sheet at least one thin polyethylene film in the presence of an organic peroxide cross-linking agent for the film; and
(4) heating the plies of salt impregnated wood sheet to a temperature between about 250° F. and about 350° F., under a pressure of between about 150 pounds per square inch gauge and about 250 pounds per square inch gauge and for a period of time between about 3 minutes and about 10 minutes.

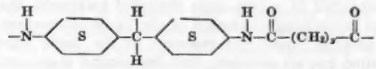
3,817,823
CRIMPABLE COMPOSITE POLYCARBONAMIDE FILAMENT

Earl H. Olson and Klaus F. Traumann, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 82,579, Oct. 21, 1970, which is a continuation-in-part of application Ser. No. 775,678, Nov. 14, 1968, both now abandoned. This application Sept. 25, 1972, Ser. No. 292,156
Int. Cl. B32b 31/30; D02g 3/00
U.S. Cl. 161—173 6 Claims



An improved composite filament comprising polyamide components of different composition and shrinkage characteristics, the components being comprised of at least 50 mole percent of repeating units of the formula



wherein y is an integer in the range of 8–10, inclusive. The filaments are formed by extruding these components in molten form, quenching the extruded filaments and then drawing the filaments. The filaments have a unique response to after-treatments (e.g., dry heat) used in the manufacture of textile products such as carpets.

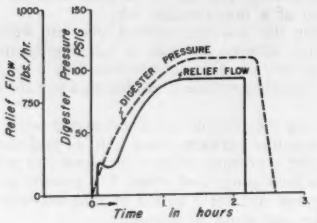
3,817,824
TERPENE RECOVERY PROCESS INCLUDING CONTROL OF A DIGESTER RELIEF OUTLET

Robert E. Marks, Jacksonville, Fla., assignor to Envirotech Corporation, Salt Lake City, Utah

Filed Oct. 2, 1972, Ser. No. 294,421
Int. Cl. D21c 7/12
U.S. Cl. 162—61 1 Claim

Improved batch kraft digestion of wood chips is obtained by venting digester vapors through a valve at maximum opening shortly after digester heating is initiated, then gradually reducing the valve aperture while maintaining digester pressure ascending gradually to a value be-

tween about 80 and about 120 p.s.i.g., and thereafter maintaining substantially constant relief flow through the valve



and substantially constant digester pressure until terpenes are substantially depleted from the resulting pulp.

3,817,825

BLEACHING AND REFINING PROCESS FOR PRODUCING DISSOLVING PULPS

Romeo John Conca, Shelton, Wash., Herbert Lawrence Hergert, Madison, N.J., and Lawrence Frank Maranville and Albert Marian Hughes, Shelton, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Filed June 19, 1972, Ser. No. 263,954
Int. Cl. D21c *9/12, 9/14*
U.S. Cl. 162—89 **8 Claims**

Dissolving pulps suitable for use in the manufacture of viscose rayon are prepared from unbleached sulfite pulps by a bleaching and refining process including the steps of (1) chlorination; (2) combined alkaline hypochlorite dilute caustic extraction; (3) cold caustic extraction with concentrated caustic solution and (4) alkaline hypochlorite treatment.

3,817,826

PROCESS FOR FRACTIONATED RECOVERY OF LIGNIN AND CELLULOSE FROM BARK

John Hoye, Nygard, Norway, assignor to A/S Toten Cellulosefabrik, Nygard, Norway

No Drawing. Filed Sept. 20, 1972, Ser. No. 290,510
Claims priority, application Norway, Sept. 23, 1971, 3,521/71
Int. Cl. C07g *1/00*; D21c *5/00*
U.S. Cl. 162—93 **8 Claims**

Lignin and cellulose are recovered from bark. The bark is subjected to a two stage chemical treatment, the first stage comprising extraction of the lignin component with an alkaline liquid and recovery of the lignin from the alkaline extract solution, and the second stage comprising digestion of the extraction residue whereby essentially pure cellulose is obtained.

3,817,827

SOFT, ABSORBENT FIBROUS WEBS CONTAINING ELASTOMERIC BONDING MATERIAL AND FORMED BY CREPING AND EMBOSSING

Charles S. Benz, Glen Mills, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Mar. 30, 1972, Ser. No. 239,539
Int. Cl. D21b *5/24*; B21f *1/00*
U.S. Cl. 162—113 **16 Claims**

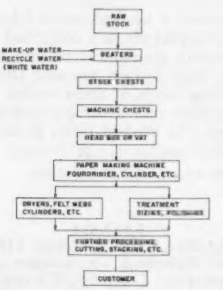
A soft, absorbent creped fibrous web formed by deposition from an aqueous slurry and consisting of lignocellulosic fibers and about 3% to about 25% elastomeric bonding material. The lignocellulosic fibers interbond with each other to form the stiff bonds associated with papermaking, and the elastomeric bonding material is uniformly distributed throughout the web (by addition to the slurry of the beater) and forms flexible bonds where it contacts the fibers. The web has been mechanically worked to partially fracture stiff bonds in selected locations to increase the stretch, flexibility, and softness of the web while retaining sufficient stiff bonds in desired locations to maintain strength. In the preferred product of the invention, the mechanical working which partially fractures the creped web is carried out by embossing to produce a distorted web contour of raised areas and depressions which increases web bulk and to create apertures uniformly distributed throughout the web. The apertures are elongated in the machine direction of the web and greatly increase cross-machine direction stretch of the web. The embossing operation allows retention of stiff bonds in selected critical locations where they maintain the web distortions and preserve bulk.

3,817,828

METHOD OF MICROBIOLOGICAL CONTROL OF PAPER MILL PROCESSES

Bernard Bendiner, 2722 W. Glenlake, Chicago, Ill. 60660

Filed Sept. 30, 1970, Ser. No. 76,825
Int. Cl. D21h *3/16*
U.S. Cl. 162—161 **11 Claims**



A process for the microbiological control of pulp slurries in the paper industry wherein pulp slurries located in the wet end process of a paper making installation can be virtually sterilized by the use of a water soluble, anionic surfactant, preferably the formaldehyde-condensed naphthalene sulfonates in conjunction with chlorine or chlorine liberating microbicides such as, for example, chlorine dioxide, hypochlorous acid, chlorine water, calcium hypochlorite, the alkali metal hypochlorites such as sodium hypochlorite, and the like. The microbicidal effectiveness obtained with the conjoint use of such anionic surfactants and chlorine or chlorine liberating microbicides is equivalent to the use of greatly increased amounts of chlorine alone which increased amounts of chlorine would be otherwise objectionable insofar as odor, corrosion, loss of retention and fiber degradation are concerned.

3,817,829

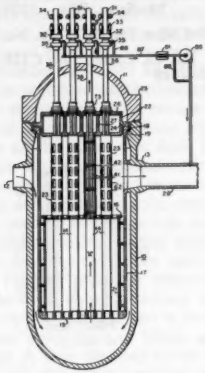
NUCLEAR REACTOR INTERNALS CONSTRUCTION AND FAILED FUEL ROD DETECTION SYSTEM

Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,781
Int. Cl. G21c *17/06*
U.S. Cl. 176—19 LD **8 Claims**

A system is provided for determining during operation of a nuclear reactor having fluid pressure operated control rod mechanisms the exact location of a fuel assembly

with a defective fuel rod. The construction of the reactor internals is simplified in a manner to facilitate the testing



for defective fuel rods and to reduce the cost of producing the upper internals of the reactor.

3,817,830

METHOD FOR OBTAINING OPTICALLY ACTIVE COMPOSITION FROM RACEMATE OF VANILLYLMANDELIC ACID

George D. Hegeman, Berkeley, and George L. Ellman, Tiburon, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

No Drawing. Original application Mar. 19, 1971, Ser. No. 126,295, now Patent No. 3,749,643. Divided and this application Mar. 8, 1973, Ser. No. 339,232

Int. Cl. C12b *1/00*

U.S. Cl. 195—2 1 Claim

A method for determining the amount of D(—)vanillylmandelic acid in human urine is described wherein D(—)vanillylmandelic acid is converted in the presence of an enzyme preparation containing D(—)vanillylmandelic acid dehydrogenase to vanillyl glyoxylate, some of the glyoxylate further converted in the presence of the enzyme preparation to vanillin. The amounts of vanillyl glyoxylate and vanillin thus formed can be quantitatively measured using standard spectrophotometric assay techniques.

3,817,831

PROCESS FOR PRODUCTION OF ALKALI METAL SALT OF HEPARIN

Edward Mancilla, Chicago, Richard L. Peting, Hazelcrest, and Laverne W. Van Ness, Homewood, Ill., assignors to Wilson Pharmaceutical & Chemical Corporation, Chicago, Ill.

No Drawing. Filed Jan. 10, 1973, Ser. No. 322,450

Int. Cl. C12b *1/00*

U.S. Cl. 195—7 8 Claims

Heparin-containing animal tissue, such as hog mucosa, is subjected to digestion action in an aqueous medium, to produce a heparin-containing digestion extract and the heparin recovery is accomplished by selectively passing a low molecular weight fraction of said digestion extract thru a semipermeable membrane to produce as a residuum a concentrate of proteins in which heparin is a component. Mucopolysaccharide complexes consisting predominantly of heparin complex are precipitated from the concentrate by addition of a quaternary ammonium salt. The quaternary ammonium salt complexes are dissolved in a salt solution and ethyl alcohol mixed with the salt solution in a volume sufficient to dissolve the quaternary ammonium salt component and thereby precipitate heparin in an alkali metal salt form.

3,817,832

PROCESS FOR ISOMERIZING GLUCOSE TO FRUCTOSE

Norman E. Lloyd, Leonard T. Lewis, Robert M. Logan, and Dilip N. Patel, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 88,187, Nov. 9, 1970, now Patent No. 3,694,314, which is a continuation-in-part of abandoned application Ser. No. 55,996, July 17, 1970. This application Sept. 25, 1972, Ser. No. 292,067

The portion of the term of the patent subsequent to Sept. 26, 1989, has been disclaimed

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 F 16 Claims

Process of enzymatically converting glucose to fructose wherein a glucose-containing solution is passed, under specific conditions, through a bed of cells of microorganisms containing cell bound glucose isomerase, said bed having a depth to width ratio of less than about 2.

3,817,833

ENZYME COMPOSITION FOR MEASUREMENT OF URINARY D(—)VANILLYLMANDELIC ACID

George D. Hegeman, Berkeley, and George L. Ellman, Tiburon, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

No Drawing. Original application Mar. 19, 1971, Ser. No. 126,295, now Patent No. 3,749,643. Divided and this application Mar. 8, 1973, Ser. No. 339,257

Int. Cl. C07g *7/028;* C12d *13/10*

U.S. Cl. 195—62 3 Claims

A method for determining the amount of D(—)vanillylmandelic acid in human urine is described wherein D(—)vanillylmandelic acid is converted in the presence of an enzyme preparation containing D(—)vanillylmandelic acid dehydrogenase to vanillyl glyoxylate, some of the glyoxylate further converted in the presence of the enzyme preparation to vanillin. The amounts of vanillyl glyoxylate and vanillin thus formed can be quantitatively measured using standard spectrophotometric assay techniques.

3,817,834

RECOVERY OF SALTED-OUT PROTEINS

Clarence Walter Wilson, 1074 Galls Creek Road, Gold Hill, Oreg. 97525

Continuation-in-part of application Ser. No. 68,870, Sept. 2, 1970, which is a continuation-in-part of application Ser. No. 643,231, June 2, 1967, both now abandoned. This application Oct. 24, 1972, Ser. No. 300,097

Int. Cl. C07g *7/02, 7/022, 7/00*

U.S. Cl. 195—66 R 28 Claims

Proteins, e.g., enzymes, are often extracted from natural sources as colloidal sols in aqueous media. By the addition of inorganic salts such as ammonium sulfate, these sols can be broken and the protein recovered. However, this salt precipitation technique often yields a fine suspension of protein which is difficult to recover. According to the present invention, salt-precipitated proteins are economically and conveniently recovered by the addition of an organic agglutinating agent such as kerosene or acetone, which brings about a rapid agglomeration of the suspended protein material.

3,817,835

PROCESS FOR THE PRODUCTION OF ANTIMICROBIAL AGENTS

Saul Lewis Neidleman, Lawrence Township, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 810,782, Mar. 26, 1969. This application Sept. 8, 1971, Ser. No. 178,797

Int. Cl. C12d *9/00, 9/06, 9/14*

U.S. Cl. 195—80 R 8 Claims

This invention relates to a method for the production of antimicrobial agents in crude filtrates, whole broths

or cell extracts of microorganisms, which comprises treating these with a source of positive halogen, such as an N-haloamide, N-haloimide or a halogenating enzyme.

3,817,836

METHOD OF PREPARING MACROLIDE ANTIBIOTICS

Robert John Theriault, Kenosha, Wis., and Earl Elmer Fager, Lake Villa, Ill., assignors to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed May 30, 1972, Ser. No. 257,630

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **5 Claims**

A microbial conversion method of preparing 9-dihydroniddamycin from niddamycin or 9-dihydrocarbomycin A from carbomycin A (magnamycin A) comprising the steps of inoculating *Streptomyces albireticuli* NRRLB 1670 or *Streptomyces eurocidicus* NRRLB 1676 cultures into a fermentation medium, incubating for sufficient time to allow growth, adding said niddamycin or carbomycin A substrate to the fermentation, reincubating for sufficient time to permit the microbial conversion of the substrate to take place, and isolating said 9-dihydroniddamycin or said 9-dihydrocarbomycin A.

3,817,837

ENZYME AMPLIFICATION ASSAY

Kenneth E. Rubenstein, Palo Alto, and Edwin F. Ullman, Atherton, Calif., assignors to Syva Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 143,609, May 14, 1971. This application Nov. 6, 1972, Ser. No. 304,156

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **91 Claims**

Novel biological assay method for determining the presence of a specific organic material by employing a modified enzyme for amplification. By employing receptors specific for one or a group of materials (hereinafter referred to as "ligands") and binding an enzyme to the ligand or ligand counterfeit to provide an "enzyme-bound-ligand," an extremely sensitive method is provided for assaying for ligands. The receptor when bound to the enzyme-bound-ligand substantially inhibits enzymatic activity, providing for different catalytic efficiencies of enzyme-bound-ligand and enzyme-bound-ligand combined with receptor.

The receptor, ligand and enzyme-bound-ligand are combined in an arbitrary order and the effect of the presence of ligand on enzymatic activity determined. Various protocols may be used for assaying for enzymatic activity and relating the result to the amount of ligand present.

3,817,838

METHOD OF DETECTING AND MEASURING LIPASE ACTIVITY

Norman E. Harris, Waltham, Mass., and Elwyn T. Reese, Caracas, Venezuela, assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,942

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **5 Claims**

Lipase activity is detected and measured by incubating an aqueous solution extracted from a suspected fat-containing material with a solution of polyoxyethylene (20) sorbitan monolaurate and assaying the incubated solution to measure the reduction in ester groups of the polyoxyethylene (20) sorbitan monolaurate resulting from lipase induced deesterification.

3,817,839

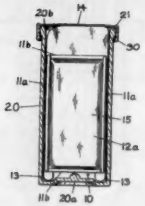
BI-MEDIA DIP PLATE

Don R. Warren, 715 S. Few St., Madison, Wis. 53703

Filed Mar. 29, 1971, Ser. No. 128,905

Int. Cl. C12b *1/00*; C12k *1/04*

U.S. Cl. 195—140 **1 Claim**



A bi-media dip plate for use in performing a method of bacterial quantitation and differentiation. The dip plate has a raised border on each opposed face for separating finite areas of deposit for culture media from potential contaminants in contact with the edges of the dip plate and has legs for spacing the area of deposit above a supporting surface. The dip plate is used in combination with a vial which maintains the dip plate in a stable, erect position.

3,817,840

COKE GUIDE CAR

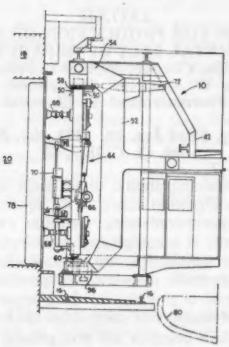
Klaus Stender, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed June 9, 1972, Ser. No. 261,324

Claims priority, application Germany, June 30, 1971, P 21 32 382.0

Int. Cl. C10b *25/14, 43/04*

U.S. Cl. 202—241 **5 Claims**



The coke guide car has a body portion mounted on wheels movable along rails and the coke guide car is movable longitudinally along the coke side of a coke oven

battery. Suitable drive means are provided to propel the coke guide car and position the coke guide car adjacent a selected coke oven chamber. A coke guide is mounted on the body portion adjacent one end thereof and is movable longitudinally toward and away from the coke oven chamber. A vertical column is mounted on the coke guide car body portion in spaced relation to the coke guide. Coke oven door jamb cleaning apparatus and coke oven door lifting apparatus are mounted on the vertical column in angular relation to each other. Drive means are provided to rotate the vertical column and position either the jamb cleaning apparatus or the coke oven door lifting device in overlying relation with a preselected coke oven chamber. Other drive means are provided to move the vertical column toward and away from the coke oven chamber to thereby selectively position either the coke oven door lifting device in abutting operative relation with the selected coke oven door or the coke oven door jamb cleaning device in operative relation with the selected coke oven door jamb. A coke oven door unlatching mechanism is positioned on the vertical column and is arranged to unlatch the coke oven door prior to lifting and removing the coke oven door. A door cleaning device is positioned on the coke guide car adjacent the vertical column and is arranged to move toward and away from the vertical column to clean the coke oven door supported on the door lifting device. An operator's compartment is positioned between the coke guide and the vertical column so that the operator may observe both the coke guide and the apparatus on the vertical column.

3,817,841

SEPARATING ADIPONITRILE FROM MIXTURES

David William Bonniface and David Brian Catlow, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 2, 1973, Ser. No. 320,179

Claims priority, application Great Britain, Jan. 19, 1972, 2,638/72

Int. Cl. C07c *121/26*

U.S. Cl. 203—29 **4 Claims**

2-cyanocyclopenten-(1)-ylamine is removed as an impurity from crude adiponitrile by distilling to give a low-boiling fraction containing adiponitrile and the said impurity, and high-boiling fraction containing adiponitrile and higher boiling material, combining the two fractions, adding water and heating to hydrolyse the said impurity, and then distilling to recover adiponitrile.

3,817,842

PROCESS FOR PURIFYING BROMOCHLOROTRIFLUOROETHANE BY AZEOTROPIC DISTILLATION

Thomas M. Reed, Micanopy, Fla., assignor to PCR, Inc., Gainesville, Fla.

No Drawing. Filed Apr. 26, 1973, Ser. No. 354,743

Int. Cl. B01d *3/36;* **C07c** *19/08*

U.S. Cl. 203—58 **13 Claims**

A process for purifying bromochlorotrifluoroethane is disclosed, wherein 1,2-dichlorohexafluorocyclobutane impurity is removed from the bromochlorotrifluoroethane by forming a maximum boiling azeotrope of the bromochlorotrifluoroethane with acetone or tetrahydrofuran and thereafter distilling, under refluxing conditions, the resulting azeotropic composition until the residue contains less than 0.01% of the dimer impurity.

Process of the present invention allows the production of halothane of improved purity, suitable for use as an anesthetic.

3,817,843

ELECTRODEPOSITION OF IRON FOIL

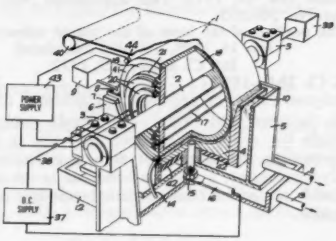
Frederick Barrett, Heswall, England, assignor to The Electricity Council, London, England

Filed Apr. 12, 1972, Ser. No. 243,390

Claims priority, application Great Britain, Apr. 13, 1971, 9,236/71

Int. Cl. C23b *7/02, 7/04*

U.S. Cl. 204—13 **3 Claims**



An improved method of making iron foil by electrodeposition on a drum cathode, in which the cathode is internally heated. Also, a method of making iron foil which, as stripped from the cathode, has an acceptable Jenkin's Bend value. An apparatus for carrying out the above methods is described and includes a drum cathode with a titanium cathode surface uniformly spaced from a carbon anode; electrolyte flows between the cathode and anode under substantially streamline conditions so as to keep the anolyte and catholyte separated; heaters are mounted inside the cathode and P.T.F.E. sealing strips bearing on the edge portions of the cathode surface enable the stripped iron foil to have acceptable edges not requiring a trimming operation.

3,817,844

METHOD OF ELECTROLITIC DESCALING-ACTIVATING AND BRIGHTENING AND PLATING TITANIUM AND ITS ALLOYS

Earl W. K ·ndall, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Continuation-in-part of abandoned application Ser. No. 765,155, Oct. 4, 1968. This application June 11, 1971, Ser. No. 152,394

The portion of the term of the patent subsequent to Sept. 23, 1986, has been disclaimed

Int. Cl. C23b *1/00, 5/48*

U.S. Cl. 204—15 **14 Claims**

Honeycomb sandwich panel structures formed of titanium and its alloy are prepared for electroplating and subsequent brazing-diffusion bonding by subjecting the same to a series of baths, all operated at ambient room temperature. The panel parts are first cleaned by immersion for 1–5 minutes in a non-aqueous chromic-sulfuric acid bath to remove mill marks, fingerprints, and other surface contaminants. The parts are next descaled to remove oxides by immersion for 5–10 minutes in an non-aqueous acetic-sulfuric-hydrofluoric acid bath which is the electrolyte in an electrolytic system in which the titanium part is the anode and the cathode electrode is formed of carbon or copper. From 2–3 volts are applied across the electrodes in descaling the panel facing sheets, and from 4–5 volts are used in descaling the honeycomb core which is activated by this treatment and thereby prepared for electroplating to receive one or more plating

layers of different metals. The activated parts are brightened by immersion for 1–5 minutes in an aqueous nitric-boric-hydrofluoric acid bath.

3,817,845

PHOTOPOLYMERIZABLE EPOXY SYSTEMS CONTAINING SULFOXIDE GELATION INHIBITORS

Jacob H. Feinberg, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

No Drawing. Continuation-in-part of application Ser. No. 144,665, May 18, 1971, now Patent No. 3,711,391, dated Jan. 16, 1973. This application Nov. 7, 1972, Ser. No. 304,573

The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed

Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.11 30 Claims

Polymerization of epoxides and mixtures of epoxides with lactones and vinyl compounds, polymerizable through the action of cationic catalysts, is controlled by providing, in association with a radiation-sensitive catalyst precursor, a gelation inhibitor in the form of a sulfoxide compound such as methyl sulfoxide or n-propyl sulfoxide.

3,817,846

CONTROL OF ANODE SPACING IN ALKALI METAL CHLORIDE ELECTROLYTIC CELLS

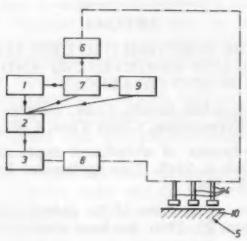
Wolfgang Gebauer, Leverkusen, and Richard Schlee, deceased, late of Leverkusen, by Babette, named Barbara Schlee, heir, Leverkusen, and Eberhard Zirngiebl, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of abandoned application Ser. No. 720,376, Apr. 10, 1968. This application Aug. 13, 1970, Ser. No. 63,455

Claims priority, application Germany, Apr. 18, 1967, F 52,155

Int. Cl. C01d *1/14;* B01k *3/00;* C22d *1/04*

U.S. Cl. 204—99 6 Claims



In an alkali metal chloride electrolytic cell, the spacing between the anode and the mercury cathode is controlled by:

(1) at certain predetermined time intervals, driving the anode towards the cathode until a short circuit occurs

(2) immediately withdrawing after the short circuit the anode a predetermined distance from the cathode (e.g., by withdrawing the anode at a fixed rate for a predetermined length of time, a_1)

(3) then advancing the anode a distance less than the distance withdrawn (e.g., by advancing the anode at the same rate as in step (2), for a predetermined length of time a_2 less than time a_1). A time delay can be interposed between the withdrawal step (2) and the advancement step (3), if desired, to permit removal of anode pieces from the cathode.

3,817,847

RECONCENTRATING SPENT ALKALI METAL CHLORIDE SOLUTION FOR RECYCLING TO ELECTROLYSIS CELL

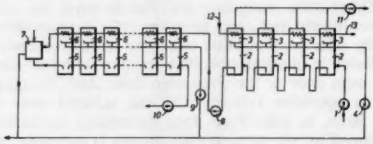
Hans Guth, Bergisch-Neukirchen, Richard Eberlein, Leverkusen, Herbert Wiechers, Opladen-Lutzenkirchen, and Eberhard Zirngiebl, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 17, 1972, Ser. No. 254,274

Claims priority, application Germany, May 28, 1971, P 21 26 516.7

Int. Cl. C01d *1/08*

U.S. Cl. 204—99 4 Claims



In the electrolysis of an alkali metal chloride by the amalgam process wherein a concentrated solution of alkali metal chloride is subjected to electrolysis in a cell to form chlorine and alkali metal amalgam, and the concentration of alkali metal chloride in said cell is reduced, the improvement which comprises withdrawing from said cell the alkali metal chloride solution of reduced concentration, adjusting its pH to about 4 to 10, evaporating the solution to increase its concentration, adding thereto makeup fresh solution and recycling the concentrated solution to said cell. Evaporation is preferably effected by multiple-stage flashing, the concentration of spent solution ranging from about 200 to 280 grams per liter and recycle solution having a concentration of at least about 310 grams per liter. The preferred alkali metal chloride is sodium chloride.

3,817,848

EFFLUENT TREATMENT

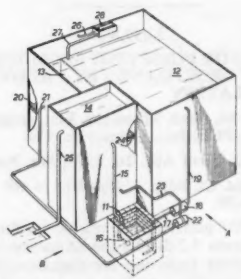
William Ewert Scragg, Rye, England, assignor to Cadborough Engineering Company, Limited, Hertford, England

Filed Feb. 14, 1972, Ser. No. 225,989

Claims priority, application Great Britain, Feb. 23, 1971, 5,244/71

Int. Cl. C02c *5/12;* C02b *1/82*

U.S. Cl. 204—152 9 Claims



Method and apparatus for treatment of effluent, particularly farm effluent, in which the effluent including solids and fibrous matter to be treated is stored in a storage container and passed into an aeration compartment only after a portion of the treated effluent has been removed. Fibrous material with entrained activated sludge is removed over

the edge of the aeration compartment via a rotary screen filter.

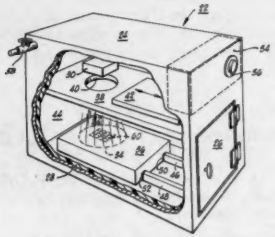
3,817,849
METHOD FOR REDUCING EMBRITTLEMENT CONDITION OF METAL

Robert W. Blosser, 305 E. Ridgewood Drive 73110, and Gordon L. Richard, 1400 Brookdale Drive 73115, both of Oklahoma City, Okla.

Continuation-in-part of application Ser. No. 844,579, July 24, 1969. This application Oct. 29, 1970, Ser. No. 85,023

Int. Cl. B01j *1/10*

U.S. Cl. 204—157.1 **11 Claims**



An improved method for reducing the condition of embrittlement in a metal specimen with both heat and a neutron flux of selected density. The method consists of placing a metal speciman, in heated environs and in view of neutron radiation for a predetermined period of time in order to alleviate any embrittlement condition and/or to reduce likelihood of such condition at a later time, such heat/neutron irradiation tending to rearrange the interstitial makeup of the metal specimen, e.g. by bringing about dissociation of diatomic or molecular hydrogen to its monatomic state.

3,817,850
PHOTOPOLYMERIZABLE EPOXY SYSTEMS CONTAINING SUBSTITUTED ACYCLIC AMIDES OR SUBSTITUTED UREAS AS GELATION INHIBITORS

Jacob H. Feinberg, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

No Drawing. Continuation-in-part of application Ser. No. 144,666, May 18, 1971, now Patent No. 3,711,390. This application Nov. 7, 1972, Ser. No. 304,469

The portion of the term of the patent subsequent to Jan. 16, 1990, has been disclaimed

Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.11 **38 Claims**

Polymerization of epoxides and mixtures of epoxides with lactones and vinyl compounds, polymerizable through the action of cationic catalysts, is controlled by providing, in association with a radiation-sensitive catalyst precursor, a gelation inhibitor in the form of a substituted acyclic amide or a substituted urea, such as N,N-dimethylacetamide and 1,1,3,3-tetramethylurea.

3,817,851
RADIATION CROSS-LINKING OLEFIN POLYMERS IN COMBINATION WITH TRIVINYL ISOCYANURATE

George J. Atchison and Donald J. Sundquist, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 2, 1972, Ser. No. 293,786

Int. Cl. B01j *1/10, 1/12*

U.S. Cl. 204—159.17 **6 Claims**

A cross-linked olefin polymer is produced by applying high energy ionizing radiation to a mixture of the olefin polymer and trivinyl isocyanurate in an amount such that the mixture absorbs a radiation dose of between about 0.1 and about 1 megarad. The trivinyl isocyanurate serves to enhance the cross-linkability of the olefin polymer such a high degree of cross-link is achieved with a small radiation dose. The mixture can also contain a foaming agent which can be made to expand and thereby produce a cellular product. Products fashioned of the cross-linked polymer have improved dimensional stability and are more resistant to thermal shrinkage and distortion. The cross-linked olefin polymer can be fashioned into a variety of products having utility in many fields including the packaging and construction industries.

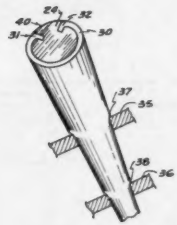
3,817,852
ZINC-STEEL SACRIFICIAL ANODE GROUND ROD

John August Toedtman, St. Louis, George William Petri, Kirkwood, and George Kayarian, Hillsboro, Mo., assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 860,214, Sept. 23, 1969. This application June 5, 1972, Ser. No. 259,487

Int. Cl. C23f *13/00*

U.S. Cl. 204—197 **4 Claims**



A ground rod is made from a sacrificial anode core inside a hardened sheath or jacket. The sheath is split longitudinally, and then the longitudinal corners or edges are turned in to provide a locking key which fits into longitudinal grooves on the anode core, thus completing the ground rod. This makes a strong rod while exposing the anode core. This way, a steel jacket, for example, provides the mechanical strength required for a driven ground rod and an exposed anode (for example, zinc) provides a sacrificial anode. Other anode material such as magnesium and aluminum may also be used.

3,817,853
COKING OF PYROLYSIS TARS

Hillis O. Folkins, Claremont, Calif., assignor to Union Oil Company of California, Brea, Calif.

No Drawing. Filed May 30, 1972, Ser. No. 257,605

Int. Cl. C10g *9/14*

U.S. Cl. 208—50 **9 Claims**

Pyrolysis tars which are formed in the high temperature cracking, generally in the presence of an inert diluent, of a hydrocarbon distillate or gas fraction to prepare olefins such as ethylene, propylene, butene, styrene, etc., can be subjected to an improved coking process according to this invention. This invention comprises the pretreating of the pyrolysis tars prior to coking by a hydrogenation treatment, preferably at mild conditions, which can be effected in the presence or absence of a catalyst and/or inert diluent for the tar. The hydrogenation conditions can include temperatures from about 250° to about 800° F.

and, when catalysts are employed, liquid hourly space velocities from 0.5 to about 10 volumes per volume per hour. The hydrogenation is effected to consume from 100 to about 2000 cubic feet of hydrogen per barrel of feedstock. Following this hydrogenation, the resulting partially hydrogenated pyrolysis tar is then coked in a conventional delayed coking operation employing coke drum temperatures from 775° to about 900° F. and pressures from atmospheric to about 250 p.s.i.g. to obtain an improved yield of distillate product, reduced yield of coke, and a coke of higher quality than can be obtained in the absence of such hydrogenation.

3,817,854

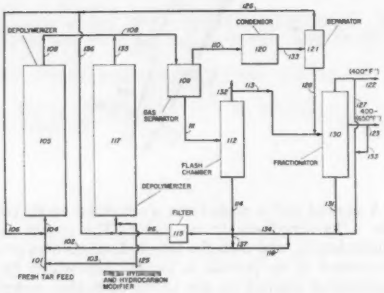
CRACKING BY THERMAL HYDRODE-POLYMERIZATION

Ralph B. Mason, Denham Springs, and Glen P. Hamner, Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Application Apr. 17, 1970, Ser. No. 29,629, now Patent No. 3,707,459, which is a continuation-in-part of abandoned application Ser. No. 839,220, July 7, 1960. Divided and this application Apr. 14, 1972, Ser. No. 244,304

Int. Cl. C10g *37/02*

U.S. Cl. 208—59 **19 Claims**



Hydrocarbon residua boiling mostly 1000° F. and above are depolymerized in the presence or absence of hydrogen in one or more stages under liquid phase conditions to obtain a product which is predominantly an aromatic gas oil and eminently suitable either as a solvent or as feed to hydrocracking operations. Although the upper boiling limit of this gas oil may be in the range of 600 to 1000° F., the process is illustrated by two schemes, one in which the gas oil is separated into fractions boiling 430–650° F., 650–1000° F. and 1000° F.+ and the other in which the gas oil is separated into 430–650° F. and 650° F.+ fractions. In each scheme an amount of the low-boiling fraction is recycled so that the feed mixture to the reaction zone contains 20 to 50% of the low-boiling fraction while the high boiling fraction is recycled at a rate such that the amount present in the feed mixture to the reactor is equal to the amount in the make product thus resulting in balanced conditions. 1–25% of an acyclic hydrocarbon modifier and/or a mild alkali is added to the reaction mixture to act as a free-radical acceptor. When a hydrocarbon is used it has a residence time of one hour or less as compared to 1 to 6 hours for the residua-cycle mixture.

3,817,855

HYDROPROCESSING OF RESIDS WITH METAL ADSORPTION ON THE SECOND STAGE CATALYST

Fritz A. Smith, Haddonfield, N.J., and Lothar H. Riekert, Ludwigshafen, Germany, assignors to Mobil Oil Corporation, New York, N.Y.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,601

Int. Cl. C10g *23/02*

U.S. Cl. 208—212 **2 Claims**

This invention provides a method for the hydroprocessing of a hydrocarbon charge stock over a catalyst characterized by a strong hydrogenation activity at low temperatures followed by conversion of the resulting product at high temperatures in the presence of a catalyst of low hydrogenation activity. The first stage reaction is conducted at a temperature in the range of 600–785° F. and exceeds 800° F.

3,817,856

METHOD FOR CONTACTING LIQUID AND SOLID PARTICLES

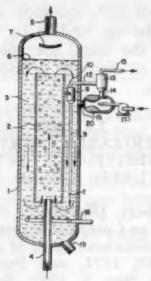
Stuart W. Aaron and Johannes W. F. M. Lemmers, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Original application Nov. 16, 1970, Ser. No. 89,967, now Patent No. 3,759,669. Divided and this application Oct. 12, 1972, Ser. No. 297,099

Claims priority, application Netherlands, Nov. 24, 1969, 6917651

Int. Cl. C10g *23/10*

U.S. Cl. 208—213 **9 Claims**



An apparatus and a process wherein a solid-liquid slurry is circulated in a vertical reactor by means of gas lift action in a centrally located tube inside the reactor. One or more hydrocyclones are used to clarify liquid product leaving the reactor and to return slurry solids to the reactor. The process is particularly desirable for catalytically desulfurizing residual oils in the presence of hydrogen.

3,817,857

TREATMENT OF WASTEWATER

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

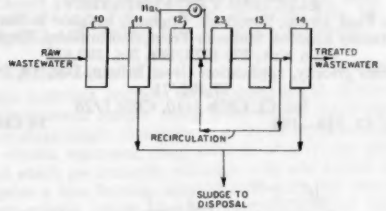
Filed Sept. 29, 1972, Ser. No. 293,594

Int. Cl. C02c *1/02*

U.S. Cl. 210—3 **12 Claims**

Process and apparatus for the oxidation of carbonaceous and nitrogenous matter in wastewater by use of a mixture of biologically active slimes attached to partially

submerged rotating contactors. The biological contactors are mounted in a single-stage treatment unit and are supplied with wastewater at a controlled rate relative to the surface of the contactors and distributed substantially evenly over the contactor surface. A denitrifying unit, located upstream from the single-stage treatment unit is



supplied with wastewater and recirculated effluent from the single-stage treatment unit. The denitrifying unit utilizes biologically active slimes attached to rotating biological contactors for the removal of carbonaceous matter from the wastewater supported by nitrate oxygen from the recirculated effluent.

3,817,858

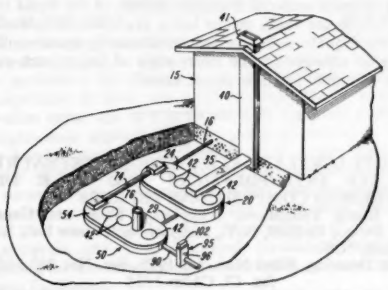
AEROBIC SEWAGE TREATMENT SYSTEM

Kenneth J. Yost, Eaton, Ohio, assignor to Coate Burial Vault Inc., West Milton, Ohio

Filed Apr. 5, 1972, Ser. No. 241,128

Int. Cl. C02b *3/08;* **C02c** *5/10*

U.S. Cl. 210—14 **14 Claims**



Liquid sewage from an individual residence is directed generally tangentially into a large, flat and shallow aerobic settlement tank to expose a large surface area of the sewage per unit volume. Air is circulated over the surface of the sewage in a generally spiral direction to effect circulation or turbulence of the sewage within the tank and diffusion of the air into the liquid. The air flow within the tank is produced by connecting the air outlet of the tank to a chimney which projects upwardly adjacent the outer wall of the residence and creates a natural draft. The liquid treated in the aerobic settlement tank is directed into a similarly shaped aerobic digestor and clarifier tank which also provides for circulation of the treated liquid and diffusion of the air in response to a generally spiral flow of air also created by the chimney draft. The second tank defines an annular clarifier chamber which receives the treated liquid before it is discharged. The discharged effluent may be directed through a chlorinator formed by a vertical housing which receives a supply of chlorine crystals. The crystals are urged downwardly into the path of the effluent by a combined weight and valve member which is effective to stop the flow of treated liquid in the event additional chlorine crystals are not added to the supply.

3,817,859

WASTE WATER TREATMENT METHOD

Jack F. Tate, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,337

Int. Cl. C02b *5/06;* **C23f** *11/10;* **E21b** *43/25*

U.S. Cl. 210—57 **2 Claims**

A method of disposing of certain process effluent waste streams by injecting them into subterranean formations which entails inhibiting the formation of solid precipitates which plug the subterranean formation. The method of inhibiting the formation of precipitates involves lowering the pH of the mixed streams and optionally removing any organic phase created thereby before injection.

3,817,860

METHOD OF DISINFECTING WATER AND DEMAND BACTERICIDE FOR USE THEREIN

Jack L. Lambert and Louis R. Fina, Manhattan, Kans., assignors to The Kansas State University Research Foundation, Manhattan, Kans.

No Drawing. Continuation-in-part of application Ser. No. 86,246, Nov. 2, 1970, which is a continuation-in-part of application Ser. No. 881,923, Dec. 3, 1969, both now abandoned. This application Nov. 21, 1972, Ser. No. 308,553

Int. Cl. C02b *3/06*

U.S. Cl. 210—29 **5 Claims**

A method of treating bacterially contaminated water for direct production of disinfected water ready for use, wherein the water is rendered bacterially sterile by passing it through a strongly basic anion exchange resin containing combined triiodide (I_3^-) without forming a detectable concentration of iodine in the disinfected water. The triiodide is combined in a stable form with the basic groups of the resin. Although the dissociation of the iodine of the resin-insolubilized triiodide is extremely low, the triiodide resins are highly bactericidal, the triiodide groups reacting on demand with bacteria in water suspensions to kill the bacteria. The invention also extends to this novel demand bactericide.

3,817,861

METHOD OF COAGULATING SUSPENDED SOLID IMPURITIES IN WATER WITH SILICONE-SILICA COMPOSITIONS

George M. J. Slusarczuk, 1555 Regent St., and John F. Brown, Jr., 1479 Dean St., both of Schenectady, N.Y. 12309

No Drawing. Original application May 28, 1971, Ser. No. 148,182. Divided and this application May 21, 1973, Ser. No. 362,446

Int. Cl. C02b *1/20*

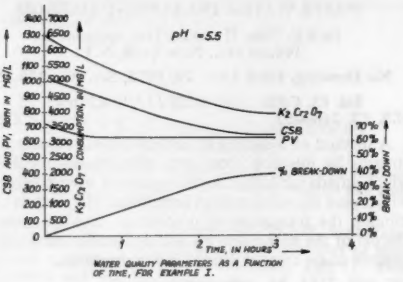
U.S. Cl. 210—47 **12 Claims**

Water-dispersed compositions resulting from contacting silicic acid sol and a hydrolyzed carbon-functional silane have been prepared. Some of these products have been shown to be very effective flocculants, particularly for the removal of biocolloids from waste-water. Water dispersions of clay have been successfully employed in place of the silicic acid sol in the flocculation of biocolloids.

3,817,862
METHOD FOR TREATING WASTE WATERS

Bert Hoke, Essen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 18, 1971, Ser. No. 190,255
Claims priority, application Germany, Oct. 16, 1970, P 20 50 874.1
Int. Cl. C02b *1/34, 3/08*
U.S. Cl. 210—63 6 Claims



WATER QUALITY PARAMETERS AS A FUNCTION OF TIME, FOR EXAMPLE I.

A method for treating waste waters containing emulsified and dissolved, oxidizable, organic substances which are free of cyanide, nitrite, hydrazine, dimethyl hydrazine, and nitrogen tetroxide. Waste water is added to carbon or ion exchangers serving as a catalyst and the interfacial area between the air and the resulting mixture of waste water and catalyst is increased.

3,817,863
DETERGENT FORMULATIONS

Chung Yu Shen, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

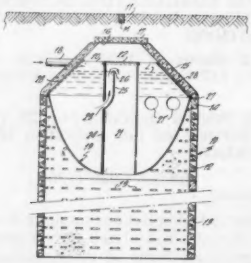
No Drawing. Filed Aug. 23, 1972, Ser. No. 283,013
Int. Cl. C11d *3/20*
U.S. Cl. 252—89 5 Claims

Detergent formulations comprising a surfactant and tetrasodium or tetrapotassium tetrahydrofuran-2,2,5,5-tetracarboxylate or hydrates thereof as a builder exhibit effective cleaning action.

3,817,864
SANITARY DRAINAGE SYSTEM

Henry B. Carlson, Kings Park, and John R. Pinezich, Northport, N.Y., assignors to Andrew Carlson & Sons, Inc., Kings Park, N.Y.

Filed June 2, 1972, Ser. No. 259,277
Int. Cl. B01d *21/10*
U.S. Cl. 210—170 5 Claims

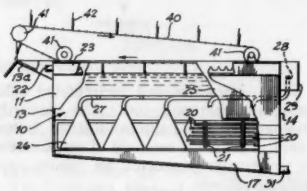


A novel and improved sanitary drainage system is provided wherein the spetic tank of the system is fabricated from Fiberglas which has advantages over the use of pre-cast concrete or other material heretofore used in that it is non-corrosive, impervious and light and strong with some flexibility. The Fiberglas spetic tank has a generally hemi-spherical, furstoconical or polygonal shape.

3,817,865
ELECTROLYTIC FLOTATION

Eric Paul Austin, Sandbach, England, assignor to Simon-Hartley Limited, Stoke-on-Trent, Staffordshire, England

Filed Nov. 27, 1972, Ser. No. 309,818
Claims priority, application Great Britain, Dec. 10, 1971, 57,402/71
Int. Cl. C02b *1/10;* C02c *1/26*
U.S. Cl. 210—192 14 Claims



Flotation apparatus wherein a liquid to be treated, such as activated sludge for example, is caused to flow through a tank equipped with at least one electrode assembly in the base thereof for the generation of gas bubbles by electrolytic action, whereby suspended materials, usually but not necessarily solids, in the liquid are carried to the surface of the tank by said bubbles to form a layer of thickened material, and there being means for removing the thickened material from the surface of the liquid content within the tank, means being provided for introducing the liquid to be treated substantially evenly either along or adjacent to one entire edge of the or each electrode assembly for flow across same.

3,817,866
ALKYLACRYLATE-ALKANEDIOL METHACRYLATE INTERPOLYMERS AND POUR DEPRESSED COMPOSITIONS THEREOF

Roy Isamu Yamamoto, Wappingers Falls, and George S. Saines, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 24, 1972, Ser. No. 309,585
Int. Cl. C10m *1/28*
U.S. Cl. 252—56 R 2 Claims

An interpolymer of an n-alkylacrylate mixture and an n-alkanediol dimethacrylate of from 10 to 18 carbons, said interpolymer having a weight ratio of said n-alkylacrylate mixture to said alkanedjol dimethacrylate of between about 99.5:0.5 to 95:5 and a molecular weight between about 3000 and 100,000 and wherein the alkyl in said n-alkyl mix is of at least 18 carbons and at least 70 wt. percent of said alkyl is between 20 and 24 carbons inclusively, the C_{20} to C_{24} alkyl group consisting of between about 2 and 65 wt. percent of C_{20} alkyl, between about 18 and 65 wt. percent C_{22} alkyl and between about 8 and 35 wt. percent C_{24} alkyl; and a waxy heavy petroleum fraction containing between 4 and 15 wt. percent macrocrystalline paraffin wax having incorporated therein a pour depressing amount of said interpolymer wherein said interpolymer is initially introduced in the waxy heavy petroleum fraction at a temperature above the solution point of the macrocrystalline wax component therein.

3,817,867

EMULSION LIQUID DEVELOPER FOR ELECTROSTATIC IMAGES

Shinichiro Nagashima, Tokyo, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 680,050, Nov. 2, 1967. This application Mar. 22, 1971, Ser. No. 126,996

Claims priority, application Japan, Nov. 11, 1966, 41/74,117; Feb. 3, 1967, 42/7,125; Feb. 16, 1967, 42/10,026; Apr. 21, 1967, 42/25,337

Int. Cl. G03g 9/04

U.S. Cl. 252—62.1 3 Claims

This invention provides an emulsion liquid developer for electrostatic images which comprises a liquid-liquid system dispersingly containing in a carrier liquid having a high electric resistance, small particles of developer phase liquid which are mutually insoluble with said carrier and comprise a film forming material containing 100 percent of non-volatile matter, the film forming material being liquid at the developing temperature.

ERRATUM

For Class 252—62 see:
Patent No. 3,817,925

3,817,868

POWDER COMPOSITIONS FOR DEVELOPMENT OF ELECTROSTATIC IMAGES

Jan Frans Van Besauw, Brasschaat, Noel Jozef De Volder, Edegem, Jozef Leonard Van Engeland, St. Katelijne-Waver, and Albert Lucien Poot, Kontich Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed May 18, 1972, Ser. No. 254,916

Claims priority, application Great Britain, May 21, 1971, 16,345/71

Int. Cl. G03g 9/02

U.S. Cl. 252—62.1 16 Claims

A developing material for use in the development of electrostatic images comprising toner particles and carrier particles is described wherein the developing material incorporates at least one solid hydrophobic bivalent or trivalent metal salt of a half-ester of a branched-chain or straight-chain aliphatic dicarboxylic acid and/or at least one bivalent or trivalent metal salt of a monoester or diester of a phosphorous oxyacid. The images obtained by means of this developing material have an improved image contrast, solid area coverage and surface smoothness. The toner particles show less tendency to cake and agglomerate and have improved mechanical strength. Cleaning of the imaging surface between use and re-use is also facilitated.

3,817,869

DISHWASHER DETERGENT COMPOSITION

Charles R. Ries, Cincinnati, and George C. Smith, Jr., Montgomery, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Aug. 17, 1972, Ser. No. 281,613

Int. Cl. C11d 7/54

U.S. Cl. 252—99 7 Claims

An automatic dishwasher detergent composition comprising an ionizable salt as a major portion thereof, an alkali metal silicate, a chlorine-yielding bleach and a water-soluble synthetic organic nonionic detergent. The ionizable salt is selected from the group consisting of alkali metal sulfates and the alkali metal salts of acetic acid and propionic acid. The detergent composition of this invention, despite being substantially sequestrant-free, cleans well and is non-filming and non-spotting.

ERRATUM

For Class 252—89 see:
Patent No. 3,817,863

3,817,870

LAUNDERING COMPOSITIONS

Richard H. Weiss, 145 E. 84th St., New York, N.Y. 10028

No Drawing. Filed May 8, 1972, Ser. No. 250,967

Int. Cl. C11d 3/08, 3/20

U.S. Cl. 252—135 4 Claims

Laundering compositions, containing a detergent surfactant and, as a builder therefor, an alkali metal or ammonium salt of malic or citric acids together with or in the absence of sodium metasilicate, eliminate the need for using phosphates.

3,817,871

SURFACTANTS FOR SOLVENT/WATER SYSTEMS AND TEXTILE TREATING COMPOSITIONS

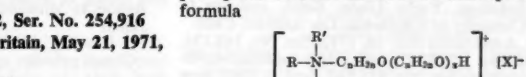
Kenneth W. Graff, Charlotte, N.C., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Original application July 7, 1969, Ser. No. 839,621, now Patent No. 3,658,717. Divided and this application Nov. 3, 1971, Ser. No. 195,461

Int. Cl. B01j 13/00

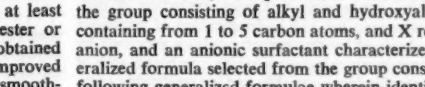
U.S. Cl. 252—312 7 Claims

Disclosed are (a) novel surfactant compositions comprising a blend of a cationic surfactant represented by the formula



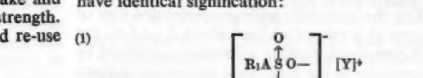
wherein n represents an integer from 2 to 4, x represents a number from 0 to 100, y represents a number from 0 to 100, R represents a radical selected from the group consisting of alkyl and alkenyl radicals containing from 6 to 22 carbon atoms, R′ represents a radical selected from the group consisting of alkyl and hydroxyalkyl radicals containing from 1 to 5 carbon atoms, and X represents an anion, and an anionic surfactant characterized by a generalized formula selected from the group consisting of the following generalized formulae wherein identical symbols have identical signification:

(1)



and

(2)

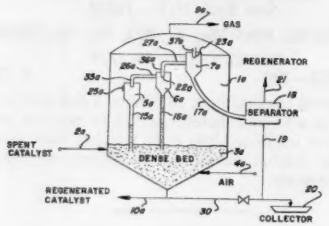


wherein R_1 represents a radical selected from the group consisting of alkyl and alkenyl radicals containing from 6 to 22 carbon atoms, A represents an arylene radical, and Y represents a cation; (b) a fluid carrier composition for the treatment and processing of textile materials which comprise water, an organic liquid, and said novel surfactant composition; and (c) textile treating compositions comprising said fluid carrier composition and a textile treating agent. Also disclosed is a textile treating composition comprising a blend of a textile softening agent and said novel surfactant composition.

3,817,872
CYCLONE SEPARATION METHOD AND APPARATUS

Richard E. Evans, Highland, and Claude Owen McKinney, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Feb. 7, 1972, Ser. No. 223,951
Int. Cl. C10g 13/18
U.S. Cl. 252—417 15 Claims



Disclosed is a method and apparatus for improving the efficiency of a gas-solid separation system. The conventional system containing a regeneration chamber and one or more sets of cyclones located within the chamber is improved by providing extensive gas-discharge tube "neck-in" in the cyclones and a final-stage solids discharge to an external, low-pressure low-cost separator. The invention has particular application in reducing dust emissions from the regenerator of a fluid catalytic cracking unit.

3,817,873
HYDROCARBON CONVERSION CATALYSTS

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Application May 28, 1971, Ser. No. 148,194, now Patent No. 3,755,147, which is a continuation-in-part of application Ser. No. 856,143, Sept. 8, 1969, now Patent No. 3,609,099, which in turn is a continuation-in-part of abandoned applications Ser. No. 761,322, Sept. 20, 1968 and Ser. No. 837,340, June 27, 1969. Divided and this application Jan. 24, 1973, Ser. No. 326,281
Int. Cl. B01j 11/82, 11/40
U.S. Cl. 252—435 10 Claims

Hydrocarbon conversion processes including hydrocracking, denitrogenation and hydrogenation of improved activity are obtained by the use of catalysts prepared by activating foraminous refractory oxides combined with at least one thermally decomposable and/or oxidizable compound of a catalytically active metal upon calcination while contacting the composite with an accelerated flow of an oxidizing gas at a rate of at least about 2 s.c.f.m. per pound of said composite. Further advantage is realized by heating the composite to the prescribed calcination temperature at a controlled gradual rate. It is also generally desirable to assure that the inlet temperature of the oxidizing gas prior to contact with the composite is less than about 500° F.

3,817,874
PROCESS FOR INCREASING THE SURFACE AREA OF ACTIVE CARBONS

Arnold N. Wennerberg, Chicago, Ill., and John T. Bukvich, Whiting, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation of application Ser. No. 760,693, Sept. 18, 1968, now Patent No. 3,642,657. This application Jan. 31, 1972, Ser. No. 222,381
The portion of the term of the patent subsequent to Feb. 15, 1989, has been disclaimed
Int. Cl. C01b 31/08, 31/10
U.S. Cl. 252—445 2 Claims

Improved process for the production of active carbons by treating porous carbon with the oxide or hyroxide of an alkali metal or alkaline earth metal, and subjecting said treated carbon to a suitable acid anhydride and heat to form high surface carbons.

3,817,875
HEAVY-DUTY MULTI-PURPOSE CLEANER

Jose Bazán, 1998 Rte. 112, Apt. 46A, Coram, N.Y. 11727

Filed Apr. 28, 1971, Ser. No. 138,360
Int. Cl. C11d 1/18
U.S. Cl. 252—527 1 Claim

A heavy-duty, multi-purpose cleaner containing the following active ingredients:

A. Approximately 75% by weight of a combination of ammonium oxalate, hexachlorophene, 2,2'-methylene-bis-(3,4,6-Trichlorophenol) and ammoniumethylene diamine tetraacetate in the approximate ratio of 6:1.5:1, with a minor amount of ammonium ortho-phenylphenate;

B. Approximately 20% by weight of a tertiary N-higher alkyl-dimethylbenzyl ammonium chloride combined with anhydrous sodium metasilicate in the ratio 2:3; and

C. Approximately 5% by weight of water.

When these ingredients are compounded, and inert and other known ingredients are added to the above mass 96% to 98% by weight, a creamy composition is obtained having a much higher cleaning effectiveness than the sum of the active components.

3,817,876
PHOTOSENSITIVE POLYMER AND COMPOSITION

Hideo Fukutani and Konoe Miura, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Sept. 16, 1971, Ser. No. 181,188
Claims priority, application Japan, Sept. 16, 1970, 45/81,116
Int. Cl. C08g 23/22
U.S. Cl. 260—2 A 5 Claims

A photosensitive composition comprising a photosensitive polymer containing at least one α,β-unsaturated carboxylic radical of the formula:

$$Ar-(YC=CX)_n-\underset{\underset{O}{\|}}{C}-O-$$

wherein X and Y, respectively, represent a hydrogen or halogen atom, or a cyano or nitro radical; Ar represents an aryl radical or a substituted aryl radical; and n represents an integer of from 1–2, which is obtained by reacting a polymer containing at least one active halogen atom with a salt of an α,β-unsaturated carboxylic acid having the formula:

$$Ar-(YC=CX)_n-\underset{\underset{O}{\|}}{C}-OH$$

wherein the definitions of X, Y, Ar and n are respectively mentioned above; and a solvent for said photosensitive polymer.

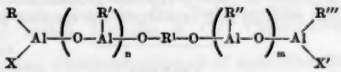
3,817,877
PROCESS FOR THE POLYMERIZATION OF OXIRANE DERIVATIVES

Pierre Malfroid, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

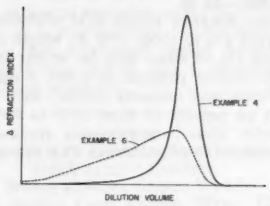
Filed Apr. 20, 1973, Ser. No. 353,102
Claims priority, application France, May 8, 1972, 7216613
Int. Cl. C08g 23/14
U.S. Cl. 260—2 A 16 Claims

Polymerization of an oxirane derivative in contact with a catalyst system of an alkyl and alkoxy deriv-

ative of aluminium which is complexed by tetrahydrofuran, of the general formula



in which *n* and *m* represent whole numbers between 0 and 10, the total of which is equal to at least 1; R, R', R'' and R''' represent hydrocarbon groups containing



from 1 to 18 carbon atoms, X and X' represent hydrogen, chlorine, or a group R, and R^1 represents a hydrocarbon group containing from 2 to 20 carbon atoms.

3,817,878

POLYOL POLYMETHACRYLATE CROSSLINKED STRONG BASE ANION EXCHANGE RESINS

David H. Clemens, Willow Grove, and Herman C. Hamann, Melrose Park, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 155,279, June 21, 1971, which is a continuation-in-part of application Ser. No. 884,325, Dec. 11, 1969, both now abandoned. This application June 29, 1972, Ser. No. 267,336

Int. Cl. C08f *15/40, 19/12, 19/20*

U.S. Cl. 260—2.1 E **12 Claims**

Strong base, anion exchange resin containing a major amount of styrene, or other aromatic vinyl constituent, and crosslinked with a minor amount of an aliphatic polyfunctional methacrylate having at least three methacrylate groups such as trimethylolpropane trimethacrylate. The resin is prepared by suspension polymerization and is thereafter given a chloromethylation and aminolysis treatment to convert it into a strong base resin. Other methods of preparing the strong base resins not involving direct chloromethylation can also be used. The resin shows unusual physical stability and is particularly useful in stringent applications such as the recovery of uranium complexes from acidic leach liquors.

3,817,879

PARTICULATE EXPANDABLE STYRENE POLYMERS COATED WITH A CARBOXAMIDE

Manfred Walter, Speyer, and Heinz Weber, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed July 28, 1972, Ser. No. 276,129

Claims priority, application Germany, Aug. 7, 1971, P 21 39 686.1

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 B **15 Claims**

The invention relates to expandable styrene polymers having a short minimum mold residence time due to a coating of 0.05 to 2% by weight of a carboxamide of the formula R—CONH—R' which melts at from 60° to 110° C, R being alkyl or alkenyl of 7 to 21 carbon atoms and R' alkyl or alkenyl of 8 to 22 carbon atoms.

3,817,880

METHOD OF MAKING HIGH OPACITY RESIN POROUS FILMS AND AQUEOUS LATEX FOR PRODUCING SAID FILMS

Robert W. Kreider, St. Charles, Ill., assignor to De Soto, Inc., Des Plaines, Ill.

No Drawing. Filed Aug. 4, 1972, Ser. No. 277,918

Int. Cl. C08f *45/24;* **C08j** *1/14*

U.S. Cl. 260—2.5 M **18 Claims**

An aqueous latex coating composition adapted to deposit films which dry to form a cellular layer of high opacity is provided by swelling the resin particles of the aqueous latex with a primary organic solvent which is essentially immisicible in the aqueous phase of the latex, such as xylene, and by introducing into the aqueous phase an at least partially water miscible organic solvent, such as propylene glycol, having a lower evaporation rate and a lesser capacity for solvating the resin of the latex than said primary solvent. When the primary solvent evaporates, a cellular film is formed, the secondary solvent serving to increase the opacification which is obtained. Particulate matter or material which crystallizes to form particulate matter is incorporated into the latex in small amount. The particulate matter serves to increase ultimate opacity and also to generate opacity more rapidly when a deposited film is dried.

3,817,881

FLAME RETARDANT POLYURETHANE FOAM

Richard J. Turley, Orange, Conn., assignor to Olin Corporation

No Drawing. Continuation-in-part of abandoned application Ser. No. 251,844, May 5, 1972, which is a division of application Ser. No. 8,040, Feb. 2, 1970, now Patent No. 3,707,586. This application Mar. 12, 1973, Ser. No. 340,277

Int. Cl. C08g *22/44, 51/58*

U.S. Cl. 260—2.5 AJ **20 Claims**

Flame retardant polyurethane foams are prepared from compositions containing as flame retardant additives, a select group of halogenated phosphate esters.

3,817,882

PROCESS FOR PRODUCING URETHANE FOAM IN THE PRESENCE OF A SILOXANE-OXALKYLENE BLOCK COPOLYMER

Fritz Hostettler, Montclair, N.J., and Eugene F. Cox, Charleston, W. Va., assignors to Union Carbide Corporation

No Drawing. Continuation-in-part of applications Ser. No. 686,031, Sept. 25, 1967, now Patent No. 3,392,153, Ser. No. 775,390, Nov. 21, 1958, now Patent No. 3,582,501, Ser. No. 775,691, Nov. 24, 1958, now abandoned, Ser. No. 778,568 and Ser. No. 778,569, both Dec. 8, 1958, both now abandoned, and Ser. No. 402,630, Oct. 8, 1964, now abandoned; application Ser. No. 402,630 being a continuation-in-part of application Ser. No. 116,981, June 14, 1961, now abandoned; said application Ser. No. 116,981 being a continuation-in-part of said application Ser. No. 775,691. This application July 22, 1966, Ser. No. 567,061

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.54 H **12 Claims**

An improvement in the art of urethane foams is described. The improvement resides in the use of a tertiary amine catalyst in combination with a siloxane-oxyalkylene block copolymer surfactant in the production of polyether-based urethane foams.

3,817,883
BRANCHED-CHAIN HYDROCARBON ELASTOMERS
John B. Campbell, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Application May 19, 1970, Ser. No. 38,862, which is a continuation-in-part of application Ser. No. 625,598, Mar. 24, 1967, both now abandoned. Divided and this application Apr. 17, 1972, Ser. No. 244,865
Int. Cl. C08d *9/04*
U.S. Cl. 260—5 5 Claims

The incorporation of a C_{30}–C_{62} di-ester of 2-(hydroxyalkyl or alkenyl)-5-norbornene in EPDM elastomer produces chain branching, with a consequent improvement in properties such as cold-flow of the uncured stock, and improved ozone resistance of natural rubber blends.

3,817,884
OZONE RESISTANT COMPOSITIONS
John B. Campbell, Hockessin, and Robert Dean Thurn, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Application May 19, 1970, Ser. No. 38,862, which is a continuation-in-part of application Ser. No. 625,598, Mar. 24, 1967, both now abandoned. Divided and this application Apr. 17, 1972, Ser. No. 244,886
Int. Cl. C08d *9/04*
U.S. Cl. 260—5 12 Claims

The incorporation of units derived from a C_5 to C_{110} polyolefin having two polymerizable double bonds said units being present in an amount resulting from the addition to the reaction mixture from which the copolymer is formed of from 0.01 to 0.5 gram-moles/kg. of copolymer formed of said C_5–C_{110} polyolefin or in EPDM elastomer produces chain branching, with a consequent improvement in properties such as cold-flow of the uncured stock, and improved ozone resistance of natural rubber or synthetic diene blends.

3,817,885
REINFORCED CURABLE POLYMERIC TRIAZINE COMPOSITIONS
Gordon H. Miller, Richmond, Va., assignor to Texaco Inc., New York, N.Y.
No Drawing. Original application Sept. 1, 1971, Ser. No. 177,170. Divided and this application Mar. 23, 1973, Ser. No. 344,378
Int. Cl. C08g *51/04, 51/18*
U.S. Cl. 260—9 9 Claims

Aliphatic nitriles having at least two —CN groups are polymerized by heating to a temperature of from about 80 to about 450° C. in the presence of a catalyst, such as a metal chloride, to form curable polymeric compositions which under the influence of heat and pressure can be converted to high strength, thermally stable, insoluble, infusible, polymeric materials, said materials containing a reinforcing agent.

3,817,886
MANUFACTURE OF PARTICULATE POLYURETHANE MATERIAL IN AN ORGANIC MEDIUM AND IN THE PRESENCE OF A BENTONE
John J. McGarr, Beverly, Mass., assignor to USM Corporation, Boston, Mass.
No Drawing. Filed June 16, 1972, Ser. No. 263,658
Int. Cl. C08g *22/04*
U.S. Cl. 260—18 TN 12 Claims

A method for preparing polyurethane resins in particulate form which comprises reacting together in finely dispersed form in an inert liquid medium, two compounds which are substantially insoluble in that medium, at least one of the reactive compounds being liquid for reactive engagement with the other compound, one of said compounds having isocyanate groups and another of the compounds having groups with reactive hydrogen atoms such as hydroxyl, amino or carboxyl groups and combining with said compound having isocyanate groups to form a reaction product insoluble in the liquid medium and recovering the reaction product.

3,817,887
ADHESIVE STICK COMPRISING AN ALKYLATED N-VINYLPYRROLIDONE POLYMER
Thomas S. Mestetsky, Easton, Pa., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Mar. 9, 1972, Ser. No. 233,341
Int. Cl. C09j *3/00, 3/14*
U.S. Cl. 260—23 R 7 Claims

There are disclosed herein solid adhesive sticks which contain from 2% to about 25% by weight of a soap, and from about 5% to about 40% by weight of an alkylated N-vinylpyrrolidone polymer in water, water-miscible organic solvents and mixtures thereof, such liquids being present in an amount of from 25% to 80% by weight. The adhesive sticks have particular application as adhesives for easy to bond substrates such as paper.

3,817,888
ABS POLYMER COMPOSITIONS
Wallace D. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Apr. 3, 1972, Ser. No. 240,837
Int. Cl. C08d *9/14*
U.S. Cl. 260—23.7 N 8 Claims

Malodor of mercaptan-modified acrylonitrile-butadiene-styrene resin compositions is reduced by incorporating into such compositions certain metal salts.

3,817,889
POLISHING COMPOSITION
Hans-Ferdi Fink, Essen-Ruttenscheid, and Gotz Koerner and Gunter Schmidt, Essen, Germany, assignors to Th. Goldschmidt AG, Essen, Germany
No Drawing. Continuation-in-part of abandoned application Ser. No. 44,532, June 8, 1970. This application Nov. 29, 1972, Ser. No. 310,262
Claims priority, application Germany, June 10, 1969, P 19 29 298.9
Int. Cl. C08g *51/52*
U.S. Cl. 260—28 17 Claims

A polishing composition comprises

(a) natural and/or synthetic wax with an acid number of about 5 to 200 or mixtures thereof, having a solidification point of between 60 and 100° C. and

a mixture consisting essentially of

(b) 30 to 60% by weight of methylsiloxanols of a viscosity of 25 to 1000 cp., and having an OH-content of not more than 8.8% by weight, 10 to 30% by weight of methylsiloxanes containing $SiOMNZ_2$-groups, wherein, M is bivalent hydrocarbon which bridges O and N through at least two carbon atoms and wherein Z is alkyl, aryl, the group

$$(CH_2CH_2NH)_{0-1}—CH_2CH_2NH_2 \text{ or } CH_2—\underset{\displaystyle Y}{\underset{|}{CH}}—OH$$

or, preferably hydrogen, 5 to 15% by weight of an organic tin catalyst inducing hardening of silicones as well as 15 to 40% by weight of esters of aliphatic alcohols of silicic acid, titanic acid or zirconic acid and/or their partial hydrolysates and/or their condensation products or fatty acid acylates of Ti or Zr, in which the fatty acid has a carbon number of at least 8.

The ratio of (a):(b) is between about 1:4 to 4:1. The components (a) and (b) may be used in the composition in customary concentrations and may be dissolved in organic solvents or be emulsified in water.

3,817,890
ADHESIVE COMPOSITION AND PROCESS
George Rouzier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France
No Drawing. Continuation-in-part of application Ser. No. 802,268, Feb. 25, 1969. This application Apr. 6, 1972, Ser. No. 241,815
Claims priority, application France, Feb. 26, 1968, 141,324
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 8 Claims
A process for making an adhesive which comprises blending one or several elastomer latices and a phenoplast system based on a precondensate of formaldehyde, resorcinol and a para-substituted phenol having one or two active methylene groups and a precondensate of formaldehyde and resorcinol.

3,817,891
LIQUID FLOCCULENT ADDITIVE FROM POLYACRYLAMIDE
Wilber L. Keas, Casper, Wyo.
(308 W. Juniper Lane, Gillette, Wyo. 82716)
Filed Mar. 22, 1971, Ser. No. 126,478
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 E 1 Claim
A liquid flocculent additive which is readily soluble in cold water is made by mixing ethylene glycol, cationic polyacrylamide and water. The additive mixture is formed by first mixing ethylene glycol and cationic polyacrylamide until substantially every particle of cationic polyacrylamide is thoroughly coated with ethylene glycol. Next water is mixed with the ethylene glycol-cationic polyacrylamide mixture until completely emulsified. Thereafter, the solution is gelled and then sheared, to overcome the gel effect, thereby to produce a highly viscous fluid which is the flocculent additive. The flocculent additive is useful in antipollution projects, such as water purification; with drilling mud and/or drilling water in the removal of cuttings and solids from the shaft of a well being drilled; and in the mining and milling of uranium, copper, zinc, gold or any other processes where the flocculation of undesirable solids in a carrier fluid is necessary or desirable in the process of mineral recovery.

3,817,892
POLY(VINYL ACETATE-DIALKYL MALEATE-ACRYLIC ACID) TEXTILE SIZES
Albert E. Corey, East Longmeadow, and Donald D. Donermeyer and Joel Fantl, Springfield, Mass., and Charles R. Williams, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 98,915, Dec. 16, 1970, now Patent No. 3,723,381. This appplication Feb. 5, 1973, Ser. No. 329,488
Int. Cl. C08f *45/44*
U.S. Cl. 260—29.6 TA 7 Claims
Compositions for sizing textile yarns comprising a solution of an interpolymerization product of vinyl acetate dialkyl maleate and acrylic acid in an aqueous base.

3,817,893
THERMOPLASTIC ELASTOMERIC COMPOSITIONS
Edward Karcher Gladding, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Dec. 22, 1972, Ser. No. 317,378
Int. Cl. C08f *45/52, 45/28*
U.S. Cl. 260—28.5 AV 8 Claims
Disclosed herein are thermoplastic elastomeric compositions comprising (a) ethylene-vinyl acetate copolymer containing about 33% to 50% by weight or vinyl acetate, (b) about 10 to 50 parts per 100 parts of (a) of mineral oil and (c) up to about 15 parts per 100 parts of (a) of a low-melting wax. The compositions are readily deformable with loss of elasticity in the temperature range of about 45° C. to 85° C., regaining dimensional stability and elasticity below about 45° C. These compositions are useful *inter alia*, in fabricating custom-fitted earplugs.

3,817,894
SILICONE LATEX CAULK
Anthony J. Butler, Greensboro, N.C., and Craig E. Graham, Saginaw, and Martin C. Musolf, Midland, Mich., assignors to The Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Aug. 10, 1972, Ser. No. 279,423
Int. Cl. C08g *31/09, 47/10*
U.S. Cl. 260—29.2 M 4 Claims
A composition is disclosed consisting essentially of a siloxane copolymer, water, a filler, surfactants and an aminofunctional silane which is useful, inter alia, as a caulk.

3,817,895
INHIBITING DISCOLORATION OF VINYLIDENE CHLORIDE POLYMERS
Carl Moore, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation of abandoned application Ser. No. 177,129, Sept. 1, 1971. This application Apr. 6, 1973, Ser. No. 348,776
Int. Cl. C08f *1/88, 27/02*
U.S. Cl. 260—29.6 MN 2 Claims
A composition consisting essentially of a polymerizate of a monomeric material containing at least about 50 percent by weight of vinylidene chloride in combination with color stabilizing amounts of hydroxylamine hydrochloride.

3,817,896
PROCESS FOR THE PREPARATION OF STABLE, AQUEOUS COPOLYMER DISPERSIONS OF VINYL ESTERS AND ETHYLENE
Eduard Bergmeister, Peter Ludwig, Hubert Wiest, and Erwin Lieb, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany
Filed Mar. 13, 1972, Ser. No. 234,196
Claims priority, application Germany, Mar. 17, 1971, P 21 12 769.5
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 R 10 Claims
A process for the preparation of stable, aqueous copolymer dispersions of ethylene and vinyl esters, particularly vinyl acetate, containing from 5 to 50% by weight of ethylene by emulsion polymerization in the presence of redox catalysts, protective colloids and/or emulsifiers, characterized in that the monomers together with the total amount of the reducing agent is charged together with auxiliary aqueous dispersion agents. Then a peroxide component is dosed-in so that a constant polymerization temperature is maintained between 0 and 100° C. and the cooling capacity of the reaction vessel is utilized.

3,817,897
CLAY COMPOSITION CONTAINING POWDERED POLYMER
Douglas W. Dill, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
No Drawing. Filed Nov. 2, 1972, Ser. No. 303,296
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 XA 12 Claims
A modeling composition having solid ingredients of a dry natural pottery clay and from about 10% to 25% by weight of a powdered polymer such as polyethylene, the powdered polymer being an extremely fine powder having particles no larger than 200 mesh in size. This modeling composition retains all the essential workability properties to allow a broad range of modeling activities while providing the advantage of low temperature baking to fuse it into a tough resistant solid.

3,817,898
SIZING COMPOSITION AND GLASS FIBERS TREATED THEREWITH
John E. Ward, Houghton, Mich., assignor to Owens-Corning Fiberglas Corporation
No Drawing. Application Nov. 15, 1971, Ser. No. 198,940, which is a division of application Ser. No. 25,584, Apr. 3, 1970, now Patent No. 3,652,326. Divided and this application Apr. 9, 1973, Ser. No. 349,145
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR **4 Claims**

A sizing for glass fibers, comprising water soluble epoxy resin, an organosilane, polyvinyl acetate copolymer and a lubricant is provided, whereby the sized glass fibers in the form of strands, possess excellent integrity.

3,817,899
CARBOXYLATED STYRENE/BUTADIENE LATICES OF A HIGH SOLIDS CONTENT
Ulrich Türck, Marl, Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Germany
No Drawing. Filed Mar. 16, 1972, Ser. No. 235,395
Claims priority, application Germany, Mar. 27, 1971, P 21 14 974.6
Int. Cl. C08d *1/09, 7/18*
U.S. Cl. 260—29.7 SQ **4 Claims**

Carboxylated styrene/butadiene lactices having a solids content of about 30 to 55 weight percent with a gel content less than about 1.5 weight percent generally less than about 1 weight percent comprising a polymerization product of monomers of:

A. about 45 to 85 percent by weight styrene or substituted styrenes;

B. about 15 to 55 percent by weight butadiene or substituted butadiene; and

C. about 0.5 to 5 percent by weight α-β-unsaturated carboxylic acids having 3 to 5 carbon atoms; wherein the following components are employed in the polymerization:

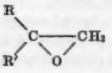
D. about 0.01 to 0.5 parts by weight of an anionic emulsifier, based on 100 parts by weight of monomers A, B and C, selected from the group consisting of alkyl sulfates having 10–20 carbon atoms, alkyl sulfonates having 10–20 carbon atoms, alkylaryl sulfonates having 8–12 carbon atoms in the alkyl chain, ammonium salts of α-sulfofatty acids having 10–20 carbon atoms and alkali salts of α-sulfofatty acids having 10–20 carbon atoms;

E. about 0.2 to 2 parts by weight of a nonionic emulsifier, based on 100 parts by weight of monomers A, B and C, selected from the group consisting of polyglycol ethers obtained by the reaction of one mole of fatty alcohols having 10–20 carbon atoms with 3–30 moles of ethylene oxide, one mole of alkylphenols having 4–12 carbon atoms in the alkyl chain with 3–30 moles of ethylene oxide or mixtures thereof; and

F. about 0.5–2 parts by weight of a water-soluble peroxydisulfate, based on 100 parts by weight of monomers A, B and C.

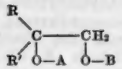
3,817,900
LUBRICANTS FOR THERMOPLASTIC RESINS SUCH AS POLYVINYL CHLORIDE
Masaru Higuchi, Hajime Ohnishi, and Hiroshi Yagihara, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,787
Claims priority, application Japan, Dec. 30, 1970, 46/122,245; Nov. 17, 1971, 46/92,284
Int. Cl. C08f *45/32, 45/34, 45/42*
U.S. Cl. 260—30.4 R **4 Claims**

Novel lubricants for plastics, especially polyvinyl chloride resins, are provided, which comprise compounds represented by the following general formulae (1) and (2):



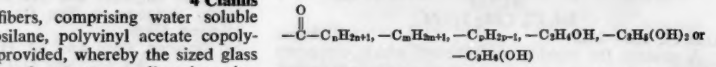
(1)

and



(2)

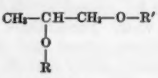
wherein R and R′ each represent hydrogen or a straight chain, saturated alkyl radical, and the sum of the carbon atoms in both radicals R and R′ being 14–42, A and B represent hydrogen



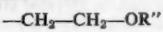
in which *n*, *m* and *p* represent an integer of 1–9, 1–10 and 2–10, respectively.

3,817,901
PROCESS FOR PREPARING A NEW SUBSTANCE THAT IS SUITABLE FOR USE AS A PLASTICIZER IN POLYMERIC COMPOUNDS
Sijbrandus E. Schaafsma, Beek, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Filed May 12, 1972, Ser. No. 252,895
Claims priority, application Netherlands, May 14, 1971, 7106621
Int. Cl. C08f *45/42, 45/34*
U.S. Cl. 260—31.4 R **5 Claims**

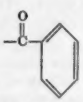
Diesters of the formula



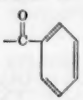
wherein one of R and R′ is



and the other of R and R′ is R‴, wherein one of R″ and R‴ is



and the other of R″ and R‴ is



or

wherein *n* is a number from 5 to 11, and process for making same, are disclosed. The use of these diesters as plasticizers in organic polymers, such as acrylic polymers and vinyl polymers, is also disclosed.

3,817,902
SILICONE RESIN COMPOSITIONS
Shiro Gomyo, Yasuhisa Tanaka, and Yoshio Fujimura, Gunma-ken, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan
No Drawing. Filed July 6, 1973, Ser. No. 377,123
Claims priority, application Japan, July 11, 1972, 47/69,467
Int. Cl. C08g *51/28, 51/34*
U.S. Cl. 260—32.8 SB **8 Claims**

Compositions comprising (1) organopolysiloxane, containing vinyl groups bonded to Si atoms, (2) alkoxysilane or alkoxypolysiloxane, (3) alkoxysilane or alkoxypolysiloxane, having amino groups, (4) a hydrophilic organic solvent, (5) a solvent for component (1) above, and (6) a curing agent. These compositions are useful for

molding silicone resin compositions. With them, molded articles having excellent properties in water and moisture resistance as well as mechanical strength and electrical properties at high temperatures can be prepared by a simple molding process.

3,817,903

COPOLYAMIDE-SOLVENT SYSTEM

Harold Wayne Hill, Jr., and Robert W. Campbell, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed July 5, 1972, Ser. No. 269,096

Int. Cl. C08g *51/34*

U.S. Cl. 260—33.4 R 9 Claims

Copolyamides produced from a bis-(4-aminocyclohexyl)methane or methyl derivative thereof, a phenylindanedicarboxylic acid or alkyl derivative thereof, and at least one straight chain dicarboxylic acid are dissolved in a solvent system comprising a mixture of a lower alcohol and a chlorocarbon, particularly effective solvent systems comprising a mixture of either methanol or ethanol and mixtures thereof with at least one chlorocarbon selected from chloroform, methylene chloride, carbon tetrachloride, trichloroethylene, 1,1,2 - trichloroethane, 1,1,2,2-tetrachloroethane and mixtures thereof. The copolyamide solutions are useful in a variety of applications such as in casting films in coating objects, in preparing finely divided copolyamides for further use, in making laminates, in preparing fibers, in solvent welding, and the like.

3,817,904

LOW TEMPERATURE RESILIENT COMPOSITION HAVING SEALANT AND CAULKING UTILITIES

Duane W. Gagle and Homer L. Draper, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,381

Int. Cl. C08c *11/16, 11/22*; C08f *19/08*

U.S. Cl. 260—33.6 AQ 2 Claims

Composition comprises essentially (a) an amorphous polypropylene, as can be obtained in production of crystalline polypropylene, which can contain up to about 5 percent ethylene in the polymer, the polymer being soluble in low boiling saturated hydrocarbons having up to about five carbon atoms in the molecule; (b) a rubber block copolymer of butadiene-styrene in approximate ratios of from 60:40 to 80:20, respectively in solution in aromatic extender oil containing approximately 40–65 percent weight of the rubber copolymer; (c) asbestos fibers, preferably shorts, in following approximate weight percent proportions: amorphous polypropylene, 25–40; rubber/oil blend, 45–25; asbestos fibers, 30–35; the composition being applied usually by adjusting to required consistency with hydrocarbon solvent, e.g. Stoddard solvent, say 5–10 weight percent of solvent added to composition for caulking and say 10–20 weight percent added for spray application as sealant. The applied composition retains resiliency and adhesion over a wide range of temperature e.g. —40 to 140° F. and is useful to seal against moisture, etc., cement surfaces, asphalt-concretes, cracks, joints, leaks and to render them resistent to chemical attacks.

3,817,905

COATING COMPOSITION

Robert Wendell Lerner, Hossein Hayati, and John Robert Flasch, Adrian, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,438

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 R 11 Claims

A coating composition containing a hydrolyzed and condensed organotrihydrocarbonoxy silane, a hydrolyzable titanium compound of the formula $Ti(OZ)_4$ or hydrocarbon soluble partial hydrolyzate thereof, wherein Z is an aliphatic or aromatic hydrocarbon radical or a hydroxylated aliphatic or aromatic hydrocarbon radical of less than 20 carbon atoms and a particulate solid. The coating composition will impart galvanic protection to metal surfaces coated therewith.

3,817,906

EPOXY RESIN COMPOSITION

Hideo Tsukioka, Mito, and Moriichi Sato and Kenichi Hondo, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1972, Ser. No. 223,973

Claims priority, application Japan, Feb. 8, 1971, 46/4,699

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP 12 Claims

An epoxy resin composition for use as a coating to protect insulating materials against strongly corrosive gaseous decomposition products containing fluorine compounds, which comprises an epoxy resin based on glycidyl ether of bisphenol A admixed with a boron trifluoride-amine complex as the hardener, alumina and magnesium fluoride, both having a particle diameter of 100μ or less, as the filler, and a thixotropic agent. The composition is semi-curable at room temperature, and on complete curing at high temperatures, it becomes a coating composition excellent in electric insulation. According to the purpose of application, the composition can also be admixed with a solvent for the epoxy resin to be applicable by spray coating.

3,817,907

THERMOPLASTIC MOLDING COMPOSITIONS AND MOLDED ARTICLES

Peter Rolf Müller, Coraopolis, Pa., and Günter Peilstöcker, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,321

Claims priority, application Germany, Mar. 31, 1971, P 21 15 552.2; Nov. 16, 1971, P 21 56 719.1

Int. Cl. C08g *51/04, 51/10*

U.S. Cl. 260—37 PC 9 Claims

Thermoplastic molding compositions and molded articles which have a high stiffness are provided wherein the thermoplastic is a polycarbonate containing asbestos flour. Thermoplastic molding compositions and molded articles having high stiffness and fire resistance are provided when the asbestos flour containing polycarbonate also contains from about 3% to about 7% by weight based on the total weight of the absestos flour containing polycarbonate of glass fibers.

3,817,908

RUBBER COMPOSITION

Raymond L. Guzy, Morton Grove, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed July 17, 1972, Ser. No. 272,253

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 EP 3 Claims

A rubber composition containing epichlorohydrin homopolymer with various compounding ingredients which composition exhibits extraordinary physical and chemical properties under adverse conditions. The composition is compounded to withstand degradation where exposed to oil, water and brine at temperatures in excess of 250° F. and pressures as high as 4,000 pounds per square inch.

3,817,909
LOW MODULUS ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMER

Louis H. Toporcer, Ingersol Township, and Irvin D. Crossan, Homer Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,609
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 21 Claims

A low modulus room temperature vulcanizable silicone elastomer is obtained by mixing 100 parts by weight of a hydroxyl endblocked polydiorganosiloxane, 0 to 150 parts by weight of a non-acidic, non-reinforcing filler, 2 to 20 parts by weight of

$$R(CH_3)Si\left(\begin{matrix}R' & O\\ | & \|\\ N & -C\end{matrix}CH_3\right)_2$$

in which R is methyl, vinyl or phenyl and R′ is methyl, ethyl or phenyl and 0.25 to 7 parts by weight of an aminoxysilicon compound having 3 to 10 aminoxy groups per molecule. The low modulus silicone elastomer is useful in building construction.

3,817,910
LOW COMPRESSION SET SILOXANE ELASTOMERS

George Juris Viksne, Adrian, Mich., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Jan. 2, 1973, Ser. No. 319,953
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 10 Claims

Silicone elastomers having low compression set may be obtained by incorporating alkaline earth metal silicates in curable organopolysiloxane compositions.

3,817,911
DIRECT SYNTHESIS OF COMPOSITE MATERIALS

Lynn J. Taylor, 1307 Buckingham Road, Haslett, Mich. 48840

No Drawing. Filed Apr. 7, 1972, Ser. No. 242,132
Int. Cl. C08g 51/04
U.S. Cl. 260—38 5 Claims

There is disclosed an *in situ* process for the preparation of a composite material consisting essentially of an organic polymer or copolymer having dispersed therein an inorganic oxide or mixture of oxides, said process comprising the simultaneous or sequential synthesis of the organic polymer from at least one non-polymeric organic precursor and of the inorganic oxide or oxide mixture derived from at least one inorganic-oxide precursor.

3,817,912
NONFLAMMABLE MOLDING COMPOSITIONS OF STYRENE POLYMERS

Klaus Diebel and Helmut Birkner, Marl, West Germany, assignors to Chemische Werke Huls Aktiengesellschaft

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,738
Claims priority, application Germany, Dec. 31, 1970, P 20 64 677.9
Int. Cl. C09k 3/28
U.S. Cl. 260—45.7 R 15 Claims

Improved nonflammable polystyrene molding compositions containing 1–20% of a brominated polyalkylbenzene of the formula

wherein R is bromomethyl or dibromomethyl; *m* is an integer from 2 to 4, inclusive; R′ is alkyl of 1–3 carbon atoms, bromine or chlorine, at least one R′ being ortho to each R; and *n* is an integer from 1 to 4, inclusive.

3,817,913
DIFFICULTLY-INFLAMMABLE ACRYLIC COMPOSITIONS

Wolfgang Gaenzler, Darmstadt-Eberstadt, and Guenter Schroeder, Upper-Ramstadt, Germany, assignors to Rohm GmbH, Darmstadt, Germany

No Drawing. Filed Jan. 17, 1973, Ser. No. 324,413
Claims priority, application Germany, Jan. 21, 1972, P 22 02 791.4
Int. Cl. C08d 7/10
U.S. Cl. 260—45.7 P 7 Claims

Difficultly-inflammable acrylic glass compositions which are the free-radical polymerization product of polymerizable compounds in a mixture comprising, per 100 parts by weight:

(a) 50–87 parts of methyl methacrylate;

(b) 10–40 parts by weight of a member selected from the group consisting of tribromneopentyl acrylate, tribromneopentyl methacrylate, and bromphenyl compounds of the formula

$$CH_2{=}CR{-}\left(\begin{matrix}O\\ \|\\ C{-}O\end{matrix}\right)_n{-}(XO)_p{-}Ar{-}Br_m,$$

wherein R is hydrogen or lower alkyl, X is alkylene, Ar is phenyl or substituted phenyl, n=0 or 1, p=0 when n=0, p=0 or 1 when n=1, and m is an integer from 1 to 5; and

(c) 40 to 3 parts by weight of a flame-inhibiting phosphorus compound such as phosphoric acid, or a phosphoric or a phosphonic acid ester.

3,817,914
SULFUR CONTAINING DERIVATIVES OF DIALKYL-4-HYDROXYPHENYLTRIAZINE

Martin Dexter, Briarcliff Manor, and Martin Knell, Ossining, N.Y., and Heimo Brunetti, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application July 2, 1971, Ser. No. 159,566, now Patent No. 3,709,883. Divided and this application Oct. 24, 1972, Ser. No. 299,998
Int. Cl. C08f 45/60; C08g 51/60
U.S. Cl. 260—45.8 N 9 Claims

Novel sulfur derivatives of dialkyl-4-hydroxyphenyltriazine were prepared which are stabilizers of organic material. Certain of these compounds can be prepared (1) by direct alkylation of 2,6-dialkylphenol with a 2,4-bis(alkylthio)-6-chloro-1,3,5-triazine compound; (2) by the reaction of an alkyl mercaptan with the appropriate 6(3′,5′-dalkyl-4′-hydroxyphenyl)2,4-dichloro - 1,3,5 - triazine; or (3) by the reaction of an acid chloride of dialkylhydroxybenzoic or phenylalkanoic acid with a mono or dialkyl substituted dithiobiuret. A typical embodiment of this invention is 6(3′,5′-di-t-butyl-4′-hydroxyphenyl)-2,4-bis(n-octylthio)-1,3,5-triazine. The compounds of this invention are useful as stabilizers of organic materials which are subject to oxidative and thermal deterioration.

3,817,915
ORGANOTIN STABILIZER COMPOSITION CONTAINING MORE THAN 18% TIN AND RESIN COMPOSITIONS CONTAINING THE SAME

Otto S. Kauder, Jamaica, N.Y., and Mark W. Pollock, Teaneck, N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

No Drawing. Original application Dec. 19, 1967, Ser. No. 691,866, now Patent No. 3,565,930, dated Feb. 23, 1971. Divided and this application Apr. 14, 1970, Ser. No. 32,502
Int. Cl. C08f 45/62
U.S. Cl. 260—45.75 K 33 Claims

A polyvinyl chloride resin stabilizer is provided having a high concentration of tin, in the range from about 18 to about 35% by weight, and a high concentration of

sulfur, within the range from about 10 to about 25% sulfur, comprising at least one organotin alpha- or beta-mercapto carboxylic acid ester sulfide, and preferably mixed monoorganotin and diorganotin alpha- or beta-mercapto carboxylic acid ester sulfides.

Polyvinyl chloride resin compositions are also provided, containing these stabilizers.

3,817,916

OXIDATION RESISTANT POLYMERIC COMPOSITIONS PREPARED FROM 3 - N-(4' - ANILINOPHENYL)AMINO - 2-HYDROXYPROPYL METHACRYLATE

Carl R. Parks, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed June 15, 1971, Ser. No. 153,446

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.85 **11 Claims**

Antioxidants such as the reaction product of p-aminodiphenylamine and glycidyl methacrylate [3-N-(4'-anilinophenyl)amino-2-hydroxypropyl methacrylate], and the reaction product of n-hexyl-N'-phenyl-p-phenylenediamine and glycidyl methacrylate [3-[N-(4'-anilinophenyl)-N-(1,3 - dimethylbutyl)]amino-2-hydroxypropyl methacrylate], age resistant polymers having monomeric age resisters physically combined therewith and oxidation resistant polymeric compositions prepared by free radical polymerization techniques involving the use of said antioxidants as monomers.

3,817,917

ORGANO-ELEMENT POLYSILOXANES HAVING SPIROCYCLIC STRUCTURE OF MOLECULES AND METHOD OF PRODUCING THE SAME

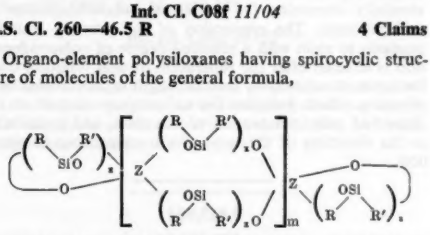
Kuzma Andrianovich Andrianov, Vystavochny pereulok 3, kv. 9, and Marina Alexandrovna Sipyagina, ulitsa Kramskogo 3, kv. 1, both of Moscow, U.S.S.R.

No Drawing. Filed July 28, 1971, Ser. No. 166,690

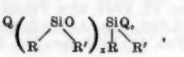
Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 R **4 Claims**

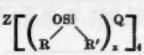
Organo-element polysiloxanes having spirocyclic structure of molecules of the general formula,



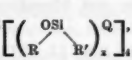
wherein Z represents Si or Ti; R and R' represent CH_3 or C_6H_5; x=1–8; m=3–30. A method of producing said organo-element polysiloxanes is disclosed comprising reacting tetrafunctional monomers of the general formula, ZY_4, wherein Z represents Si or Ti; Y represents Cl or OC_nH_{2+n1} with n=1–4, with bifunctional oligomers of the general formula,



wherein R and R' represent CH_3 or C_6H_5; Q represents OH or OM, where M is an alkali metal; x=0–4, in organic solvents at −10° to +25° C. at a molar ratio between said tetrafunctional monomers and bifunctional oligomers of 1:2 respectively. Alternatively, these tetrafunctional monomers may be reacted with tetrafunctional cross-oligomers of the general formula



wherein Z, R, R', Q have the above-mentioned significance and x=1–4, in organic solvents at −10° to +25° C. at a molar ratio between said monomers and oligomers of 1:1, or polycondensation may be effected of tetrafunctional cross-conformation oligomers of the general formula



where Z, R, R', x have the above-mentioned signficance; Q represents OH at 100–180° C. The polymers according to the invention may be used as film-forming materials, binding agents for glass fiber plastics and structuring agents in the production of elastomers.

3,817,918

TERPOLYMER OF A POLYISOCYANATE, A POLYHYDROXYPHENOL, AND AN EPOXY RESIN

Carl Albert Aufdermarsh, Jr., Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,225

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP **4 Claims**

Elastomer-polyester composites are made with a two-coat adhesive system wherein the subcoat, applied to the polyester as an aqueous dispersion and cured at 204–244° C., is a terpolymer of a polyisocyanate, a polyhydroxyphenol, and an epoxy resin having high hydroxyl group content; the relative equivalent proportions of the monomers being about 1:(0.4–1):(0.05–0.70). This subcoat gives composites having the same desirable performance characteristics as the best prior art adhesive but does not present the prior art system's pollution hazards.

3,817,919

STABILIZATION OF POLYPHENYLENE OXIDES

Seizo Nakashio, Nishinomiya, Toshio Takemura, Kyoto, and Takashi Maruyama, Kunio Ota, and Tetsuki Seto, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 10,998, Feb. 12, 1970. This application Apr. 3, 1972, Ser. No. 240,874

Claims priority, application Japan, Feb. 27, 1969, 44/15,080

Int. Cl. C08g *23/20*

U.S. Cl. 260—47 ET **13 Claims**

Polyphenylene oxides are stabilized to thermal oxidation by treatment with boron-containing compounds such as, for example, boron trihalides, trialkylborons or complex salts thereof. The resulting polyphenylene oxides are not colored, do not cause degradation in strength and are not deteriorated in flow property, even when exposed to

high temperatures. The boron-containing compound is ordinarily used in a proportion of 0.01–10% by weight based on the weight of the polyphenylene oxide. The above-mentioned treatment is effected either in the presence or absence of a treating medium. Further, the boron-containing compound may be in the form of gas.

3,817,920

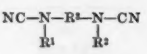
THERMOSETTING POLY(HEXASUBSTITUTED MELAMINES)

Bruce A. Langager, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 12, 1972, Ser. No. 261,923

Int. Cl. C08g *33/02*
U.S. Cl. 260—47 R **17 Claims**

Poly(hexasubstituted melamines) prepared by the Lewis acid catalyzed polymerization of arylene *bis*-(N-substituted)cyanamides, of the formula



wherein R^1 and R^2 are broadly alkyl or aryl and R^3 is arylene, such polymers being curable to B stage as well as fully cured condition, having excellent high temperature stability and being useful as structural adhesives or binders.

3,817,921

POLYAMIDE-IMIDES

George L. Brode, Somerville, and James H. Kawakami, Piscataway, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Application Sept. 21, 1971, Ser. No. 182,526, which is a continuation-in-part of abandoned application Ser. No. 50,968, June 29, 1970. Divided and this application Nov. 10, 1972, Ser. No. 305,327

Int. Cl. C08g *20/32*
U.S. Cl. 260—49 **20 Claims**

A series of polyamide-imides which are both tractable and soluble in polar solvents as well as stable at high temperatures has been prepared by the condensation polymerization of aromatic diamines or oligomers containing oxygen, sulfone, and optionally alkylidene linkages with trimellitic acid, trimellitic acid anhydride or trimellitic anhydride acid chloride.

3,817,922

ADHESIVE COMPOSITIONS

Bruce P. Barth, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,170

Int. Cl. C08d *9/10*; C08g *31/16, 37/14*
U.S. Cl. 260—53 R **4 Claims**

The invention relates to a solution of the exothermic reaction product of an oil-soluble, heat-reactive phenol-formaldehyde resin, zinc oxide and ammonia, which when provided with neoprene forms a homogeneous mixture therewith. The homogeneous mixture can be employed as adhesive cements having excellent peel strengths, tack times and hot strengths.

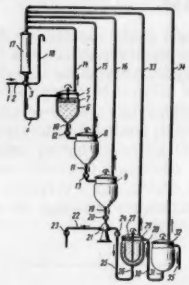
3,817,923

CONTINUOUS PHENOL-ALDEHYDE, POLYCONDENSATION PROCESS

Petr Sergeevich Ivanov and Vladimir Mikhailovich Demkin, both of Moscow, U.S.S.R.

Continuation of application Ser. No. 40,822, May 27, 1970, which is a continuation-in-part of abandoned application Ser. No. 494, Jan. 2, 1970, which is a continuation of abandoned application Ser. No. 755,005, Aug. 27, 1968, which in turn is a continuation of abandoned application Ser. No. 412,409, Nov. 19, 1964. This application June 5, 1972, Ser. No. 259,901

Int. Cl. C08g *5/06*
U.S. Cl. 260—57 C **6 Claims**



The process is intended for manufacturing phenol resins. The reaction between phenol and aldehyde is carried out in an aqueous solution wherein primary resinous reaction products are persent in a dispersed phase. The time of residence of said resinous products in the reaction vessel does not exceed substantially the time required for their sedimentation from the solution. The removal of the resinous products practically as they form makes it possible to intensify the reaction without substantially increasing the degree of polycondensation of said products. The conversion of the primary resinous products to resin with a required degree of polycondensation is effected after the separation of said products from the aqueous solution by maintaining it at an elevated temperature, which provides for an accurate control of the degree of polycondensation of the resin, and contributes to the obtaining of the resin of a homogeneous composition.

3,817,924

POLYMERIC ULTRAVIOLET LIGHT STABILIZERS PREPARED FROM PHENOL FORMALDEHYDE CONDENSATES

Raymond H. Young, Jr., Macon, Ga., and Albert H. Markhart, Wilbraham, and Joseph G. Martins, Ludlow, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of applications Ser. No. 849,210, Aug. 11, 1969, now Patent No. 3,650,799, and Ser. No. 606,595, Jan. 3, 1967, now abandoned. This application Feb. 11, 1972, Ser. No. 225,653

Int. Cl. C08g *5/06*
U.S. Cl. 260—59 **6 Claims**

This invention relates to polymeric ultraviolet light stabilizers which are the esterification products of (A)

phenol-formaldehyde condensates, which have at least 12.5 mol percent of the positions ortho to the esterifiable hydroxy group unsubstituted, and (B) a compound capable of esterification with phenol formaldehyde condensate which contains at least one ring of six carbon atoms characterized by having benzenoid unsaturation. Upon exposure to ultraviolet light, the exposed portion of the ester rearranges to form a polymeric compound which is a barrier to ultraviolet light.

3,817,925

HEAT BARRIER COMPOSITION

Rudy M. Gunnerman, Beverly Hills, Calif. (% Insulation Systems, Inc., 11233 Condor Ave., Fountain Valley, Calif. 92708)

No Drawing. Continuation-in-part of application Ser. No. 763,967, Sept. 30, 1968, which is a continuation-in-part of application Ser. No. 713,231, Mar. 14, 1968, both now abandoned. This application June 25, 1971, Ser. No. 156,993

Int. Cl. C08j *1/30*

U.S. Cl. 252—62 18 Claims

A heat barrier comprising a bonded intimate admixture of alkaline earth metal sulfate and finely divided carbonaceous material providing a source of available carbon, said barrier having a surface coating comprising alkaline earth metal sulfide, formed by in situ reaction of alkaline earth metal sulfate and carbon under the influence of heat, which restricts transfer of thermal energy.

3,817,926

POLYAMIDE-IMIDES

Denis R. Pauze, Scotia, and Fred F. Holub, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,032, Dec. 14, 1970. This application Sept. 12, 1972, Ser. No. 288,457

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 13 Claims

Amide-imide group containing polymers are prepared by reacting the polymeric reaction product of carboxylic acid anhydride or dicarboxylic acid, or both, and polyamine with polyisocyanate material.

3,817,927

PRODUCTION OF SOLUBLE POLYIMIDES

Jenoe Kovacs, Bobenheim-Roxheim, and Wolfgang Eisfeld, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,394

Claims priority, application Germany, Dec. 3, 1971, P 21 59 935.9

Int. Cl. C08g *20/32*

U.S. Cl. 260—65 5 Claims

A process for the production of thermoplastic polyimides. 3,3',4,4'-diphenylsulfone tetracarboxylic acid or a derivative of the same which forms amide groups is polycondensed with 4,4'-diaminobenzophenone in a polar organic solvent at a temperature of more than 160° C. to form a polyimide. The polyimides prepared according to the invention are particularly suitable for the production of moldings resistant to high temperatures.

3,817,928

HYDROXY-TERMINATED POLYESTERS OF THIA-BISALDEHYDES

Katsumi Hayashi, Euclid, Ohio, assignor to The Lubrizol Corporation, Cleveland, Ohio

No Drawing. Continuation of abandoned application Ser. No. 868,617, Oct. 22, 1969. This application Feb. 11, 1971, Ser. No. 114,732

Int. Cl. C08g *11/00, 22/08*

U.S. Cl. 260—67 S 8 Claims

Derivatives of thia-bisaldehydes are formed by reacting a thia-bisaldehyde with another reagent such as alcohol, organo-metallic compound, or metal base. They are useful for industrial purposes such as the preparation of polyurethanes.

3,817,929

POLYCONDENSATION IN DROPLET AND COMPACT LIQUID PHASES

Lothar Buxbaum and Josef Hrach, Kufstein, Tirol, Austria, assignors to Ciba-Geigy A.G.

Filed Dec. 9, 1971, Ser. No. 206,508

Claims priority, application Austria, Dec. 18, 1970, A 11,419/70

Int. Cl. C08g *17/01*

U.S. Cl. 260—75 M 4 Claims

The present invention relates to a polycondensation process for the production of thermoplastic saturated polyesters and it is characterized by the joint presence in the condensation polymerization reaction of two discrete liquid phases, a compact phase and a droplet phase.

3,817,930

LIQUID POLYMERCAPTO ADHESION PROMOTING AGENTS ADAPTED TO BE INCORPORATED IN POLYSULFIDE SEALANT COMPOSITIONS TO IMPROVE THE ADHESION THEREOF AND POLYSULFIDE SEALANT COMPOSITIONS CONTAINING THE SAME

José L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,571

Int. Cl. C08g *22/10, 39/10*

U.S. Cl. 260—75 S 19 Claims

A sealant composition based on liquid polysulfide polymers that are curable by oxidative curing agents to rubber-like form and having improved adhesion after curing to substrates such as glass, aluminum and concrete is obtained by incorporating in the sealant composition an adhesion promoter which is a linear condensation product of a dicarboxylic acid and a dihydric alcohol. At least

one of the dicarboxylic acid and dihydric alcohol has a reactive mercapto group thereon to provide a curing site by means of which the adhesion promoter may enter into the oxidative cure of the liquid polysulfide polymer base. The reaction mixture from which the adhesion promoting linear condensation product is made also includes a thiodiglycol and the condensation product has an average of 200 to 1500 molecular weight units per mercapto group.

3,817,931

PROCESS FOR THE PRODUCTION OF POLYESTERS

Eric Howard Brooks and Arthur Morris, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 6, 1972, Ser. No. 215,941

Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R **5 Claims**

Polyesters are prepared by polycondensation of a bis (dihydric alcohol) ester of an aromatic dicarboxylic acid using a defined catalyst which is produced by reacting a hydroxyl bearing support material (e.g. alumina) with a metal compound. The catalyst may be granular and in this form is filterable from the product polymer.

3,817,932

TWO-STEP PROCESS FOR PRODUCING WATER-SOLUBLE ALKYD RESINS

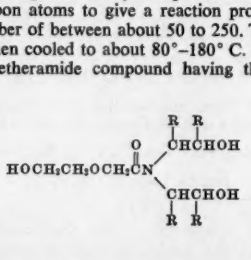
Kenneth H. Albers, Alden E. Blood, and Thomas C. Snapp, Jr., Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application June 10, 1971, Ser. No. 151,952, now Patent No. 3,709,858, dated Jan. 9, 1973, which is a continuation-in-part of application Ser. No. 41,577, May 28, 1970, now Patent No. 3,652,501, dated Mar. 28, 1972. Divided and this application July 11, 1972, Ser. No. 270,760

The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C08g *20/30*
U.S. Cl. 260—75 N **7 Claims**

Water-soluble alkyd resins having low Gardner color are prepared by a plural-step process in which a polycarboxylic acid having 4 to 20 carbon atoms is reacted at a temperature of from about 110° C. to 260° C. with a polyhydric aliphatic or cycloaliphatic alcohol having 2 to 10 carbon atoms to give a reaction product having an acid number of between about 50 to 250. The reaction product is then cooled to about 80°–180° C. and blended with a trioletheramide compound having the formula:



wherein each R is hydrogen, methyl or ethyl. The blend is then reacted at a temperature of about 110° C. to 260° C. for a sufficient time to give an alkyd resin having an acid number of between about 30 to 100 and a low Gardner color.

3,817,933

PROCESS FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT HYDROXYPOLYURETHANES WHICH ARE SOLUBLE IN ORGANIC SOLVENTS

Georg Niederdellmann, Heinrich Bormann, and Horst Conrad, Dormagen, and Günter Oertel, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 28, 1972, Ser. No. 293,186

Claims priority, application Germany, Oct. 6, 1971, P 21 49 836.2

Int. Cl. C08g *22/04, 53/02*
U.S. Cl. 260—75 NE **11 Claims**

A three-stage process for the preparation of high molecular weight polyurethanes which are soluble in organic solvents and which contain free hydroxyl groups is disclosed wherein a dihydroxy compound and a diisocyanate are reacted at a temperature of 110° C. to 160° C. in the presence of a non-polar or slightly polar solvent in a first stage and then reacted at a reduced temperature of 60° C. to 100° C. for 12 to 72 hours in a second stage and then the solvent is removed in a third stage at a temperature above 100° C.

3,817,934

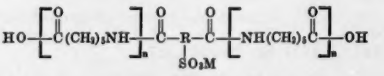
SULFODICARBOXYLIC ACID CAPROLACTAM REACTION PRODUCT MODIFIED POLYESTERS

Maneung Hahn, Bath, and Yuzi Okuzumi, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,961

Int. Cl. C08g *20/30*
U.S. Cl. 260—75 N **6 Claims**

An improved method for preparing cationic dyeable high molecular weight linear polyesters and copolyesters which comprises adding to a polyester forming process a modifying agent of the formula



where R is a divalent organic radical selected from the group consisting of (a) divalent aliphatic radicals, (b) substituted and unsubstituted aromatic radicals where said substitution is selected from alkyl radicals and (c) divalent phenylindane radicals, *n* is an integer ranging from 2 to 20 and M is an alkali metal.

3,817,935

MANUFACTURE OF POLYBUTYLENE TEREPHTHALATES

Ludwig Beer, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 22, 1973, Ser. No. 343,814

Int. Cl. C08g *17/13, 17/15*
U.S. Cl. 260—75 R **9 Claims**

Manufacture of linear polyesters of polybutylene terephthalates containing at least 80% molar of butylene terephthalate units using specific catalysts consisting of titanium compounds produced from titanium dioxide, α-hydroxy carboxylic acids and tertiary amines. The polyesters are suitable for the manufacture of filaments, fibers, sheeting and injection molded articles.

3,817,936

POLY(OXYALKYLENE)-POLYESTER-POLY-SULFIDE CROSS-LINKED POLYMERS AS SEALANTS

Faber B. Jones and Oren L. Marrs, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 53,313, July 8, 1970. This application May 4, 1972, Ser. No. 250,291

Int. Cl. C08g *17/04, 23/22*

U.S. Cl. 260—76 **20 Claims**

Mercaptoalkanoic acids and thiodialkanoic acids are reacted with a poly(oxyalkylene)-polyol having on average more than two pendent hydroxy groups per molecule to form a poly(oxyalkylene)-polyester-poly(monosulfide)-polythiol having on average more than two pendent thiol groups per molecule. The poly(oxyakylene)-polyester-poly(monosulfide)-polythiol is oxidatively coupled or cured, preferably in a sealant formulation, with an oxidative coupling or curing agent, including metallic oxides, peroxide, sulfur and the like, to form a composition useful as a sealant.

3,817,937

REACTING HYDROXYL-TERMINATED ISOCYANURATE SALTS WITH DIISOCYANATES

Perry A. Argabright, Larkspur, and Brian L. Phillips and Larry M. Echelberger, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 4, 1971, Ser. No. 195,812

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 NC **11 Claims**

By reacting a diisocyanate and metal cyanate in the presence of an aprotic solvent, then contacting the reaction product with an excess of diol, a hydroxyl-terminated polyelectrolyte salt can be formed which is capable of reaction with an organic diisocyanate to produce a more complex polyelectrolyte.

3,817,938

POLYOXAZOLIDONE CATALYST

Kaneyoshi Ashida, 1–3–20 Nishihara-cho, Shibuya-ku, Tokyo, Japan, and Kurt C. Frisch, 17986 Parke Lane, Grosse Ile, Mich. 48138

No Drawing. Continuation-in-part of abandoned application Ser. No. 115,103, Feb. 12, 1971. This application Jan 5, 1973, Ser. No. 321,326

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 R **17 Claims**

Oxazolidones are produced by reacting an organic isocyanate with an epoxide in the presence of an alkoxide or phenoxide of a metal from Group II–A or III–A of the Periodic Table of Elements. Polyoxazolidones produced according to the present invention are useful starting materials for the manufacture of a wide variety of products including foams, coatings, adhesives, elastomers, and the like.

3,817,939

ORGANIC CARBONATE SALTS AS ISOCYANATE TRIMERIZATION CATALYSTS

Michael George Allen, Hudson, Wis., and George Van Dyke Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Feb. 21, 1973, Ser. No. 334,481

Int. Cl. C08g *22/40*

U.S. Cl. 260—77.5 NC **9 Claims**

Isocyanates are trimerized, polymerized, or reacted with polyols, in the presence of a catalytic amount of an organic carbonate salt to produce isocyanurates, polyisocyanurates, urethane-modified polyisocyanurates, or isocyanurate-modified polyurethanes. The organic carbonate salt catalyst is the reaction product of carbon dioxide and alkoxide or aryloxide.

3,817,940

AROMATIC DIAMINES

Johannes Blahak, Cologne-Buchheim, and Erwin Muller and Helmut Kleimann, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

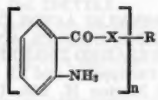
No Drawing. Original application Aug. 12, 1971, Ser. No. 171,381. Divided and this application Mar. 9, 1973, Ser. No. 339,667

Claims priority, application Germany, Aug. 17, 1970, P 20 40 644.4

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AM **7 Claims**

Novel aromatic diamines having the general formula



wherein *n* is an integer of from 2 to 8, X is sulfur or oxygen, and R is an *n*-valent hydrocarbon radical which may be interrupted by O or S atoms and which is obtained by removing OH or SH groups from a polyol or polythiol having a molecular weight of less than 600, are prepared by reacting a compound having the formula $(HX)_nR$ where X, *n* and R are as defined above with about *n*-equivalents of an isatoic acid anhydride in the presence of a strong base. The aromatic diamines of the invention are particularly useful as the active hydrogen containing component for reaction with polyisocyanates in the preparation of synthetic resins by the isocyanate-polyaddition process.

3,817,941

WHOLLY AROMATIC CARBOCYCLIC POLYCARBONAMIDE FIBER HAVING INITIAL MODULUS IN EXCESS OF 170 GPD AND ORIENTATION ANGLE OF UP TO 40°

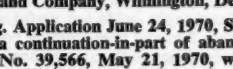
Thomas I. Bair, Wilmington, Del., and Paul W. Morgan, West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application June 24, 1970, Ser. No. 49,539, which is a continuation-in-part of abandoned application Ser. No. 39,566, May 21, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 693,739, Dec. 27, 1967. Divided and this application Aug. 23, 1971, Ser. No. 174,201

Int. Cl. C08g *20/20, 20/38*

U.S. Cl. 260—78 R **7 Claims**

Fibers of high molecular weight p-oriented polycarbonamides of recurring units of the formula:

(I) 

wherein Ar_1 is p-phenylene and/or chloro-substituted p-phenylene, and Ar_2 is p-phenylene. These fibers have an initial modulus in excess of 170 g.p.d. and an orientation angle of up to 40° and/or a sonic velocity of at least about 4 km./sec. either as-extruded or after maintaining the fibers at 0.99 to 1.50 times their as-spun lengths and heating in a zone maintained between 200° and 1000° C.

Optically anisotropic spinning dopes of these polycarbonamides of Formula I units, lithium or calcium chloride and certain amide or urea solvents, are also disclosed.

3,817,942

MANUFACTURE OF POLY(AMIDE-IMIDES)

Jenoe Kovacs, Bobenhem-Roxheim, and Ernst Schefczik, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

No Drawing. Filed Jan. 18, 1973, Ser. No. 324,857
Int. Cl. C08g 20/32
U.S. Cl. 260—78 TF 6 Claims

A process for the manufacture of poly(amide-imides) in which reaction products of trimellitic anhydride and unilaterally N-monoacetylated diamines are polycondensed to the corresponding poly(amide-imides) at temperatures of from 120° to 500° C. with the elimination of acetic acid. The poly(amide-imides) thus formed are suitable for use as wire enamels and electrical insulating materials.

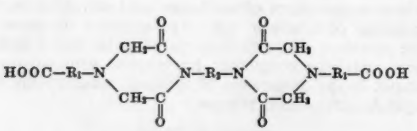
3,817,943

NOVEL DICARBOXYLIC ACIDS CONTAINING DIKETOPIPERAZINE GROUPS AND POLYAMIDE POLYMERS PREPARED THEREFROM

Lester T. C. Lee, Parsippany, and Eli M. Pearce, Somerville, N.J., and Morton H. Litt, University Heights, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application May 21, 1970, Ser. No. 39,510, now Patent No. 3,728,348. Divided and this application Jan. 31, 1973, Ser. No. 328,216
Int. Cl. C08g 20/32
U.S. Cl. 260—78 TF 4 Claims

Dicarboxylic acids having the formula



wherein R_1 represents a phenylene or alkylene radical and R_2 represents a divalent organic radical, are prepared by reacting a tricarboxylic acid having the formula

$$HOOCR_1N(CH_2COOH)_2,$$

such as nitrilotriacetic acid, with a diamine having the formula $H_2NR_2NH_2$, such as hexamethylene diamine, in a substantially 2:1 molar ratio in the presence of an inert solvent. The dicarboxylic acids are useful as monomers in preparing linear film and fiber-forming polyamides and polyesters in accordance with conventional methods for preparing such polymers from dicarboxylic acids.

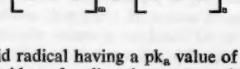
3,817,944

POLYESTERS WITH ACID END GROUPS

Frank N. Jones, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,398
Int. Cl. C08g 39/00; C09c 3/02
U.S. Cl. 260—78.3 R 4 Claims

Polymeric materials represented by the general structure



where

A is an acid radical having a pk_a value of −1 to 6;

Y is the residue of a di-, tri-, or tetravalent isocyanate radical;

B is a polyester or copolyester segment, and

m and *n* are 1, 2 or 3,

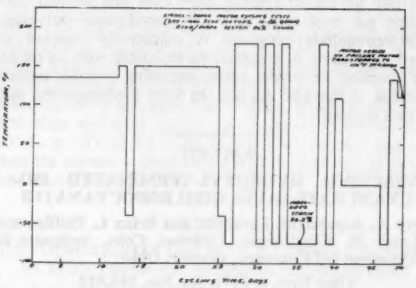
useful as pigment dispersing aids.

3,817,945

CURING SYSTEM FOR CARBOXY TERMINATED POLYBUTADIENE PROPELLANTS

Adolf E. Oberth, Fair Oaks, and Rolf S. Bruenner, Orangevale, Calif., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Mar. 4, 1970, Ser. No. 19,148
Int. Cl. C08f 27/00, 3/42
U.S. Cl. 260—78.4 D 4 Claims



A curing system for carboxy terminated polybutadiene (PBD) propellant binders consisting of a combination of the ethylaziridine adduct of sebacic acid (BISA) and trimethylaziridinylphosphine oxide (MAPO). The combination of BISA and MAPO is useful in that it forms a curative which results in improved temperature cycling capability and improved aging stability for PBD bound solid propellant grains.

3,817,946

ACRYLIC RESINS CONTAINING EPOXY FUNCTIONALITY

Buren R. Ree, Village of Afton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Feb. 2, 1973, Ser. No. 329,161
Int. Cl. C08d 3/02
U.S. Cl. 260—79 4 Claims

Solid, low molecular weight, storable epoxy-functional acrylic terpolymers of glycidyl methacrylate, a lower alkyl acrylate and methyl methacrylate and the process for their preparation.

3,817,947

POLYSULFIDE POLYMERS WITH INCREASED RESISTANCE TO SOLVENTS

Eugene R. Bertozzi, Yardley, Pa., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,277
Int. Cl. C08g 23/00
U.S. Cl. 260—79.1 22 Claims

Polysulfide elastomers and —SH terminated liquid polymers with increased resistance to solvents are prepared by copolymerizing dichloroethylformal and epichlorohydrin in the presence of alkali metal or alkaline earth metal polysulfides. The resultant polymer has diethylene formal units and 2-hydroxypropylene units randomly dispersed but each separated by polysulfide groups from each other. The hydroxyl groups randomly along the polymer chain result in increased resistance to organic solvents while the ethylformal groups provide the normal polysulfide properties.

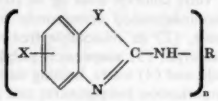
3,817,948

2-AMINOBENZOAZOLES AS ACTIVATORS FOR VULCANIZATION OF RUBBER

Kamel Boustany, Akron, Ohio, and John Joseph D'Amico, Saint Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 19, 1972, Ser. No. 273,173
Int. Cl. C08c 11/52, 9/00; C08f 27/06
U.S. Cl. 260—79.5 B 16 Claims

A class of 2-aminobenzoazoles is described which is used with primary accelerators to enhance the vulcanization rate of rubber. The new vulcanization activators are characterized by the formula



in which Y is oxygen or sulfur, X is hydrogen, alkyl, alkoxy, nitro, halo or hydroxy, and *n* is one or two; when *n* is one R is hydrogen, alkyl, aryl, cycloalkyl, aralkyl, hydroxyalkyl, or alkenyl; when *n* is two R is alkylene. The conjoint use of the new activators with thiazole accelerators is particularly advantageous since the vulcanization rate is increased without affecting the processing safety of the vulcanizable composition.

3,817,949

UNSATURATED ACID-ALLYL ACETAL POLYMERS

Alain Ribba, Chateaurenault, France, assignor to Manufacture DeProduits Chimiques Protex, Paris, France

Filed Mar. 8, 1972, Ser. No. 232,907
Claims priority, application France, Mar. 30, 1971, 71.12009
Int. Cl. C08f 15/02
U.S. Cl. 260—80.3 E 9 Claims

Reticulated carboxylic copolymers in powder form, for use as thickening agents in an aqueous medium, and method of preparing same, are composed of 85 to 99% of an unsaturated $\alpha\beta$ acid such as acrylic acid, methacrylic acid or like substances, and 0.1 to 15% of an acetal of which the initial materials are allyl alcohol and dialdehyde (CH_2=CH—CH_2—O)$_2$—CH(CH_2)$_n$—CH(O—CH_2—CH=CH_2)$_2$ wherein *n* designates an integer of 0 to 2.

3,817,950

HAIR SET LACQUER AND LOTION COMPOSITION

Andre Viout, Paris, and Christos Papantoniou, Epinay-sur-Seine, both of France, assignors to Societe Anonyme diti L'Oreal, Paris, France

Division of Ser. No. 34,580, May 4, 1970, Pat. No. 3,743,715. This application Mar. 2, 1973, Ser. No. 337,467
Claims priority, application Luxembourg, May 9, 1969, 58617
Int. Cl. C08f 17/00
U.S. Cl. 260—80.72 1 Claim

Hair lacquer and lotion compositions containing in a cosmetically acceptable vehicle or carrier a copolymer of 40–90 weight percent N-vinyl pyrrolidone, 5–40 weight percent vinyl ester and 3–20 weight percent unsaturated monobasic carboxylic acid.

3,817,951

LOW-MODULUS THERMOPLASTIC ETHYLENE-TETRAFLUOROETHYLENE-HEXAFLUOROPROPENE TERPOLYMERS

Donald Nellis Robinson, Collegeville, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 20, 1972, Ser. No. 308,073
Int. Cl. C08f 15/40
U.S. Cl. 260—80.77 4 Claims

A low-modulus, nonelastic, thermoplastic terpolymer composed of copolymerized units (in mole percent) of 40 to 60% ethylene, 20 to 30% tetrafluoroethylene, and 10 to 30% hexafluoropropene.

3,817,952

BRANCHED EPDM COPOLYMERS AND A PROCESS FOR THEIR MANUFACTURE

Louis Henry Knabeschuh, Beaumont, Tex.; Fred D. Shaw, Jr., Prairie Village, Kans., and Robert David Souffle, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 25,285, April 2, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,409
Int. Cl. C08d 5/02
U.S. Cl. 260—80.78 7 Claims

A process for producing a vulcanizable branched elastomeric polymer by mixing an EPDM copolymer with sulfur, a sulfur-releasing compound, or a perioxide, and subsequently heating the resultant mixture. The copolymers of the process have less than about 30% gel, a Wallace plasticity of about 30 to 100, and an inherent viscosity of at least about 2.0 at less than 30% gel. Ozone-resistant blends of the copolymers of this invention with other elastomers are also provided.

3,817,953

PETROLEUM RESINS

Donald Anthony Younger, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 1, 1972, Ser. No. 311,152
Claims priority, application Great Britain, Dec. 15, 1971, 58225/71
Int. Cl. C08f 15/04, 15/42
U.S. Cl. 260—82 10 Claims

In a process in which a C_5 fraction from a cracked naphtha or gas oil is polymerised with the help of a Friedel-Crafts catalyst to produce a petroleum resin, the C_5 fraction is first heated to a temperature of 160° to 250°C for a period of up to 5 hours and is then held at a temperature in the range 100° to 160°C for a further period of up to 5 hours.

3,817,954

PROCESS FOR PRODUCING CONJUGATED DIENE POLYMERS

Masato Kawakami; Yoshinori Yoshida; Chihiro Nozaki, and Hideki Imai, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1973, Ser. No. 352,455
Claims priority, application Japan, Apr. 21, 1972, 47-39648
Int. Cl. C08d 1/32; C08f 19/06
U.S. Cl. 260—82.1 18 Claims

A conjugated diene polymer having a high cis-1,4 configuration content and having a high molecular weight can advantageously be produced by homopolymerizing or copolymerizing at least one conjugated diene or copolymerizing at least one conjugated diene with at least one vinyl aromatic hydrocarbon with a catalyst consisting essentially of at least one organolithium compound and at least one aliphatic nitrile in a proportion of 0.01 to 1.0 mole of the aliphatic

nitrile per carbon-linked lithium atom and optionally carbon disulfide as promoter. The vulcanizate of said polymer of isoprene is very similar in physical properties to that of a natural Hevea rubber.

3,817,955

PREPARATION OF POLYMERS USING COMPLEXES OF ORGANOMAGNESIUMS WITH CERTAIN HYDRIDES AS CATALYSTS

Conrad W. Kamienski, and Joseph H. Merkley, both of Gastonia, N.C., assignors to Gulf Resources & Chemical Corporation, Houston, Tex.

Division of Ser. No. 66,563, Aug. 24, 1970, Pat. No. 3,691,241. This application Nov. 10, 1971, Ser. No. 197,540

Int. Cl. C08d *1/32;* **C08f** *19/08*

U.S. Cl. 260—83.7 **11 Claims**

Preparation of polymers of conjugated dienes, such as those of 1,3-butadiene; utilizing, as a catalyst, complexes or organomagnesiums with (i) alkali metal hydrides or (ii) tetraalkylammonium hydrides, as, for example, complexes of di-sec-butyl-magnesiums with potassium hydride or tetramethylammonium chloride.

3,817,956

FLOWABLE ISOOLEFIN POLYMERS CONTAINING BROMINE AND PROCESS FOR PRODUCTION THEREOF

Abdulhusain Harianawala, Sarnia, Ontario, Canada, assignor to Polysar Limited-Palysar Limitee, Sarnia, Ontario, Canada

Filed Jan. 18, 1972, Ser. No. 218,813

Claims priority, application Canada, Oct. 28, 1971, 126303

Int. Cl. C08d *3/10, 5/00, 11/00*

U.S. Cl. 260—85.3 C **5 Claims**

Brominated isoolefin polymers are ozonized in solution to yield flowable bromine-containing polymers of an isoolefin which may be cured with polyfunctional curing agents.

3,817,957

PROMOTERS IN THE TREATMENT OF POLYMERIZATION MIXTURES WITH HALOGENATED POLYMERIZABLE COMPOUNDS

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 24, 1972, Ser. No. 237,873

Int. Cl. C08d *1/32;* **C08f** *1/88, 19/08*

U.S. Cl. 260—83.7 **13 Claims**

Coupling or branching in organoalkali metal-initiated polymerization reaction systems with halogenated polymerizable compounds, such as the halostyrenes, is significantly improved by the addition of polar compounds to the system after polymerization is essentially complete and prior to termination.

3,817,958

OIL AND WATER REPELLENT

Robert Holden Moyer, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 22, 1972, Ser. No. 308,857

Int. Cl. C08f *15/00*

U.S. Cl. 260—86.7 **4 Claims**

A polymer salt of a linear polymer having a pendent cationic nitrogen-containing group and an anionic moiety having a pendent polyfluoroalkyl group, for example, a polymer salt of a protonated or quaternized copolymer of ethylene and 2-(N,N-dimethylamino)ethyl methacrylate and, as the anionic moiety, the anion of the salt diethanolammonium bis(1H,1H,2H,2H-tridecafluorooctyl) phosphate, useful as an oil and water repellent for fibrous materials such as paper.

3,817,959

PROCESS FOR SUSPENSION POLYMERIZATION OF VINYL CHLORIDE WITH LOW POLYMER DEPOSITION

Thomas Balwe; Johann Bauer; Kurt Fendel; Dieter Kurz, and Alex Sabel, all of Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Filed Feb. 22, 1973, Ser. No. 334,693

Claims priority, application Germany, May 24, 1972, 2225236

Int. Cl. C08f *3/30, 15/02, 15/30*

U.S. Cl. 260—87.1 **9 Claims**

An improvement in the suspension polymerization of a polymerizate containing at least 80% of polyvinyl chloride with low polymer deposits by the steps of mixing (1) monomers selected from the group consisting of vinyl chloride and mixtures of vinyl chloride with up to 20% by weight of olefinically mono-unsaturated compounds copolymerizable with vinyl chloride, (2) an oil-soluble free-radical forming polymerization catalyst, (3) suspension stabilizers including protective colloids, and (4) water, heating said mixture under agitation to polymerization temperatures and recovering said polymerizate, the improvement comprises using from 0.001% to 1% by weight, based on the monomers, of an unbranched dialkylperoxy dicarbonate having 16 to 18 carbon atoms in the alkyl, as the oil-soluble free-radical-forming polymerization catalyst, and adding from 0.0001% to 0.01% by weight, based on the monomers, of a water-soluble salt of nitrous acid to the polymerization charge, whereby a polymerizate is recovered with low polymer deposits.

3,817,960

POLYMERS OF PERFLUOROVINYL ETHERS

Paul Raphael Resnick, Wilmington, Del., assignor to E. I. de Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 129,176, March 26, 1971, Pat. No. 3,692,843. This application Aug. 18, 1972, Ser. No. 281,987

Int. Cl. C08f *15/02, 3/38*

U.S. Cl. 260—87.5 A **3 Claims**

Compounds of the formula $CF_3O(CF_2O)_nCF_2CF_2OCF=CF_2$, wherein n is 1 to 5, are homopolymerizable or copolymerizable with tetrafluoroethylene to make polymer products of varying molecular weight. Low molecular weight homopolymer is useful as thermally stable oils and greases and high molecular weight copolymer is useful for making molded articles.

3,817,961

POLYMERIZATION OF 9-VINYL CARBAZOLE

Susan B. Gorman, Barrington, Ill., assignor to Desota, Inc., Des Plaines, Ill.

Filed Aug. 31, 1972, Ser. No. 285,374

Int. Cl. C08g *5/00*

U.S. Cl. 260—88.3 R **6 Claims**

9-vinyl carbazole is polymerized by rapidly heating the same in the form of a powdered layer containing at least about 0.25 percent by weight of azobis nitrile catalyst or initiator to cause rapid and complete polymerization in bulk in the presence of air at atmospheric pressure. The polymer product is soluble in benzene and toluene.

3,817,962

CONTROLLED POLYMERIZATION PROCESS AND APPARATUS

Dexter E. Smith, and William S. Stewart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

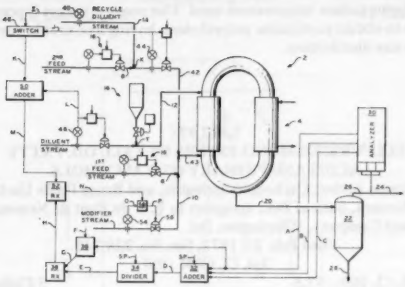
Filed Oct. 26, 1971, Ser. No. 192,290

Int. Cl. C08f *15/04; 15/40*

U.S. Cl. 260—88.2 R **6 Claims**

In a polymerization system having first and second feed streams, diluent and recycled diluent streams, and a modifier

stream controllably fed to a reactor, a resultant product stream is passed from the reactor, and a gas stream is removed from the resultant bottoms product of the reactor. The gas stream is analyzed and signals are delivered in response to the analysis. The signals are modified and compared to a modified



signal responsive to one of the flow rates of the recycled diluent stream of the second feed stream that has been modified by the flow rate of the diluent stream for providing a resultant control signal for relatively controlling the flow of the modifier stream.

3,817,963

SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Thomas Balwe; Johann Bauer, and Franz Schleberger, all of Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Filed Oct. 30, 1972, Ser. No. 301,879

Claims priority, application Germany, July 11, 1972, 2234038

Int. Cl. C08f *1/11*

U.S. Cl. 260—92.8 W **6 Claims**

An improvement in the process for polymerization of vinyl chloride in the aqueous phase in the presence of oil-soluble, free-radical-forming polymerization catalysts, protective colloids and optionally other polymerization aids which is characterized by use of a protective colloid combination consisting of hydroxyethyl cellulose and aminoethylhydroxypropyl cellulose; as well as the polyvinyl chloride produced by the process.

3,817,964

PREPARATION OF POLYALKENAMERS

Nikolaus Schon; Gottfried Pampus, both of Leverkusen; Josef Witte, Colone, and Dieter Theisen, Remscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 111,763, Feb. 1, 1971, Pat. No. 3,753,928. This application Nov. 20, 1972, Ser. No. 308,012

Claims priority, application Germany, Feb. 15, 1970, 2006776

Int. Cl. C08f *1/34*

U.S. Cl. 260—93.1 **5 Claims**

Process for the ring opening polymerisation of cyclomonoolefins by contacting the cyclomonoolefins with a catalyst comsisting of

a. a reaction product of a tungsten or tantalum halide with an acetal and

b. an organo compound of a metal of groups *Ia* to IV*a* of the Periodic Table

the molar ratio of tungsten: metal of groups *Ia* to IV*a* being from 1:03 to 1:10 and the molar ratio of tantalum: metal of groups Ia to IVa being from 1:1 to 1:10.

3,817,965

POLYMERIZATION OF VINYL COMPOUNDS IN SUSPENSION

Jacques Mace, Versailles, and Philippe Hubin Eschger, Bizanos, both of France, assignors to Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 816,859, Feb. 24, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 214,640

Claims priority, application France, Feb. 27, 1968, 68.141341

Int. Cl. C08f *7/04*, *15/02*, *15/04*

U.S. Cl. 260—93.5 W **10 Claims**

High molecular weight vinyl polymers are rapidly prepared by forming an aqueous suspension of the vinyl monomer and at least one free radical catalyst having a polymerization rate at a first polymerization temperature which is 2 to 20 times higher than thermal polymerization thereat and the most unstable catalyst having a half-life of 2 to 8 hours thereat, raising the temperature to a second polymerization temperature at which the most unstable catalyst in the suspension has a half-life of less than 1 hour, and recovering the resulting high molecular weight polymer.

3,817,966

NUCLEATION OF ISOTACTIC POLYSTYRENE

Henry Nelson Beck, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1972, Ser. No. 293,823

Int. Cl. C08f *7/04*, *45/28*

U.S. Cl. 260—93.5 A **1 Claim**

Isotactic polystyrene is heat fabricated in admixture with minor proportions of melamine, thymine, 2-hydroxybenzimidazole, oxamide and numerous other compounds to provide improved crystallization rates.

3,817,967

MODIFICATION OF ORGANIC POLYMERS

Jacques Mace, Versailles, and Rene Pornin, Arthez-de-Bearn, both of France, assignors to Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Continuation of Ser. No. 796,540, Feb. 4, 1969, abandoned. This application Feb. 25, 1972, Ser. No. 229,503

Claims priority, application France, Feb. 5, 1968, 68.138688

Int. Cl. C08f *27/04*

U.S. Cl. 260—93.5 A **10 Claims**

A commercially very useful method has been developed for activating aryl-vinyl homo- or co-polymers to rendering them capable of reacting with various substances modifying the properties of the polymers.

The method consists in thoroughly mixing the polymer by kneading with it an alkali metal, generally in an amount of 0.1 to 5 % by weight of the polymer. The mixing is carried out at a temperature at which the materials are soft enough to give a homogenous dispersion of the metal in the polymer; the temperature is of 20° to 220°C and preferably of 100° to 150°C.

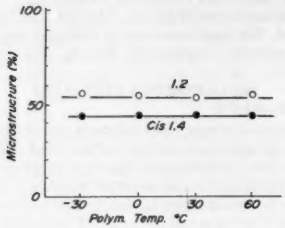
The method is particularly useful for polystyrene and polymers of styrene derivatives or homoloques. The polymers become then able to have, bound to their molecules, various groups resulting from the reaction of the active sites of the polymer with such substances as: carbon oxychloride, sulfochloride or dioxide; hydrogen sulfide; cyanide; alkali metal bicarbonate; halohydrocarbons, olefin oxides, vinyl chloride, acrylic or methacrylic esters, olefins or diolefins.

3,817,968

METHOD OF PRODUCING EQUIBINARY (CIS 1.4-1.2) POLYBUTADIENE

Junji Furukawa, Kyoto; Eiichi Kobayashi, and Takahiro Kawogoe, both of Uji, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,021
Int. Cl. C08d 1/18, 3/06
U.S. Cl. 260—94.3 8 Claims



Novel equibinary (Cis 1.4-1.2) polybutadiene which contains substantially equimolar of Cis 1.4 structure and 1.2 structure and does not almost contain trans 1.4 structure is produced by using a catalyst (1) which is prepared from trialkylaluminum and (b) dialkoxymolybdenum trichloride or a catalyst (2) which is prepared from (a') dialkylaluminum chloride and (b') molybdenum acetylacetonate.

3,817,969

MANUFACTURE OF PARTICULATE POLYETHYLENE

Heinz Mueller-Tamm, Ludwigshafen; Hans Frielingsdorf, Bad Duerkheim; Johann Nickl, Bad Duerkheim, and Erich Kolk, Bad Duerkheim, all of Germany, assignors to Badishe Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed May 8, 1972, Ser. No. 251,341
Claims priority, application Germany, May 18, 1971, 2124591
Int. Cl. C08f 1/56, 3/06
U.S. Cl. 260—94.9 DA 7 Claims

Manufacture of particulate polyethylene by polymerizing ethylene in an agitated bed of dry particulate polyethylene by means of a catalyst system comprising (1) a particulate inorganic carrier and (2) a Ziegler catalyst applied to said carrier. The catalyst system is used in the form of an intimate mixture of the catalyst system with a particulate ethylene polymer having a softening point above the polymerization temperature used, the particles in said mixture being coated with an inert organic material which is solid at 30°C but liquid at the polymerization temperature used. This process makes it possible to obtain particulate polyethylene having a desirable particle size distribution.

3,817,970

MANUFACTURE OF PARTICULATE POLYETHYLENE

Heinz Mueller-Tamm, Ludwigshafen; Hans Frielingsdorf, Bad Duerkheim; Johann Nickl, Bad Duerkheim, and Erich Kolk, Bad Duerkheim, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed May 8, 1972, Ser. No. 251,342
Claims priority, application Germany, May 18, 1971, 2124592
Int. Cl. C08f 1/56, 3/06
U.S. Cl. 260—94.9 DA 6 Claims

Manufacture of particulate polyethylene by polymerizing ethylene in an agitated bed of dry particulate polyethylene by means of a catalyst system comprising (1) a particulate inorganic carrier and (2) a Ziegler catalyst applied to said carrier. The catalyst system is used in the form of an intimate mixture of the catalyst system with a particulate ethylene polymer which does not soften at the polymerization temperature used, the particles in said mixture being coated with a saturated hydrocarbon wax which is solid at 30°C but liquid at the polymerization temperature used. This process makes it possible to obtain particulate polyethylene having a desirable particle size distribution.

3,817,971

SULFURIZED MONO-ESTERS OF TALL OIL FATTY ACIDS AND PRIMARY OXO ALCOHOLS

Norman Arthur Carlson, Wilmington, and Bruce Hollis Garth, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 23, 1972, Ser. No. 228,749
Int. Cl. C09f 1/00
U.S. Cl. 260—97.5 5 Claims

Sulfurized mono-esters of tall oil fatty acids and branched chain primary alcohols of six to 20 carbon atoms.

3,817,972

AMINE FLOTATION REAGENTS

Edward A. Grannen, Upland, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 467, Jan. 2, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,007
Int. Cl. C09f 7/00
U.S. Cl. 260—97.5 6 Claims

A new class of useful reagents for ore beneficiation are obtained by the reaction of N,N-dialkyl alkylene diamines and N,N-dialkyl-N' -alkyl alkylene diamines with reconstituted tall oil. The reagents are particularly useful for the flotation separation of ore values from siliceous materials.

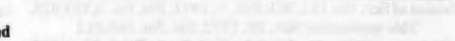
3,817,973

PROCESS FOR THE PREPARATION OF CYCLOPEPTIDES DERIVED FROM POLYMYXINS

Jean Bouchaudon, Morsang-Sur-orge, and George Jolles, Sceaux, both of France, assignors to Rhone-Poulenc S. A., Paris, France

Filed Jan. 31, 1972, Ser. No. 222,296
Claims priority, application France, Feb. 2, 1971, 71.03429
Int. Cl. C07c 103/52; C07g 7/00
U.S. Cl. 260—112.5 5 Claims

Polymyxins of the formula

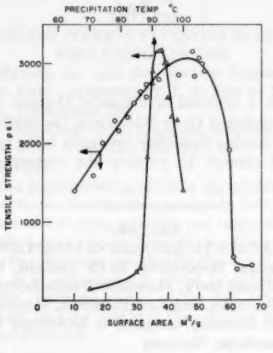


wherein A is alkyl of three through 18 carbon atoms optionally substituted by hydroxy, amino or cyano; or alkyl of one through four carbon atoms substituted by a monocyclic or polycyclic alkyl radical or phenyl optionally substituted by halogen or alkoxy; or phenyl optionally substituted by halogen or alkoxy, X is —CO— or —SO_2—, and Y—Z is one of the chains D—Phe—Leu, D—Leu—Leu and D—Leu—Ileu, are prepared by introducing the grouping A—X—Dab—Thr—Dab— onto the appropriate cyclopeptide having its amino functions protected. New polymyxins of the said formula have antibiotic properties.

3,817,974
LAUNDERED AMORPHOUS REINFORCING LIGNIN

Aurelio F. Sirianni, and Ira E. Puddington, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Apr. 19, 1972, Ser. No. 245,356
Int. Cl. C07g *1/00*
U.S. Cl. 260—124 R **11 Claims**



Lignin of improved reinforcing properties in polymers, is prepared by steps comprising:

a. laundering crude lignin in an aqueous medium until substantial amounts of non-lignin material are solubilized and separated,

b. reforming the lignin by one of (i) precipitating with acid at a pH of about 2 to about 3 at a temperature of about 88° to 95°C; and (ii) conditioning wet lignin precipitate at said pH and said temperature, and

c. washing the precipitate to remove soluble material and drying the resulting solids.

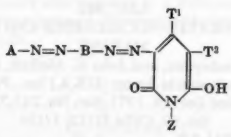
Laundering additives have been used in step (a), and impurity dispersants in step (b). Polymer latices can be added before precipitation (b) and the lignin-latex coprecipitated. The lignin can be milled directly into rubber to give ultimate tensile strengths at least of the order of 2,800 p.s.i. This lignin can also be used as a reactive reinforcing filler in plastics.

3,817,975
WATER-INSOLUBLE DISAZO DYESTUFF DERIVED FROM A DIHYDROXYPYRIDINE AS COUPLING COMPONENT

Alistair Howard Berrie, and Nigel Hughes, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 1, 1969, Ser. No. 881,311
Claims priority, application Great Britain, Dec. 9, 1968, 58280/68
Int. Cl. C09b *31/14, 33/12*
U.S. Cl. 260—156 **3 Claims**

Water-insoluble disazo dyestuff having the formula



wherein A is an optionally substituted aryl, thioazolyl, benzthiazolyl or anthraquinonyl, B is an optionally substituted phenylene, naphthylene or 4-pyrazolonyl-1-phenyl, Z is hydrogen or optionally substituted lower alkyl or phenyl, T^1 and T^2 each independently represent hydrogen, optionally substituted alkyl or aryl or hydroxy, cyano, carbonamido, acyl or carboalkoxy, and the use of said dyestuff for coloring paints, synthetic polymers and textile materials, in particular polyester textile materials, the coloration of which is fast to dry heat treatments.

3,817,976
BINDER FOR CUTTING PARTICLES OF ABRASIVE TOOL

Valentin Nikolaevich Bakul, Kirova ul., 34-a, kv. 12; Esfir Salimanovna Rabinovich, Krasnopolskaya ul., 20/15, kv. 25, and Jury Alexandrovich Yakovchuk, Lesi Ukrainki bulvar, 3, kv. 42, all of Kiev, U.S.S.R.

Continuation-in-part of Ser. No. 70,589, Sept. 8, 1970, abandoned. This application July 5, 1972, Ser. No. 269,136
Int. Cl. C08g *5/20*
U.S. Cl. 260—19 U **5 Claims**

A binder for cutting particles of an abrasive tool comprising a high-molecular component including butadiene-nitrile rubber in the amount of 100 parts by weight in combination with phenolformaldehyde resin in the amount of 10–30 parts by weight and with polyvinylchloride resin in the amount of 5–70 parts by weight, while the materials used for vulcanization, solidification, plasticization and stabilization of the ingredients of the high-molecular component include the following components taken in parts by weight

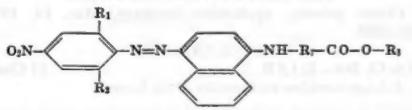
sulphur	1.5–40.0
zinc oxide	3.0–20.0
hexamethylenamine	0.5–1.5
plasticizers of polyvinyl-chloride resin	5.0–40.0
stabilizers of polyvinyl-chloride resin	0.5–3.0.

3,817,977
SUBSTITUTED PHENYL AZO NAPHTHYL DISPERSE DYES

Wolfgang Groebke, Oberwil, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Apr. 2, 1971, Ser. No. 130,773
Claims priority, application Switzerland, Apr. 10, 1970, 5329/70
Int. Cl. C09b *29/06*
U.S. Cl. 260—196 **10 Claims**

Azo compounds of low solubility in water and having the formula



wherein

R_1 is chloro, bromo, cyano or acyl,

R_2 is cyano or nitro,

R_3 is alkyl or aryl optionally substituted with nonwater solubilizing substituents, and

R_7 is alkylene of two to four carbon atoms. These compounds are highly suitable as disperse dyes for dyeing and printing fibres, yarns and textiles whice consist of or contain synthetic or semi-synthetic organic substances of high molecular weight and hydrophobic character. The dyeings obtained are outstandingly fast to light, sublimation and wet treatments.

3,817,978
4-FLUORO NUCLEOSIDES AND SUGAR INTERMEDIATES, AND METHODS OF PREPARING

Ian Jenkins, Mountain View; John G. Moffatt, and Julien P. Verheyden, both of Los Altos, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed June 16, 1971, Ser. No. 153,817
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **36 Claims**

4'-Fluoronucleosides and furanose derivatives and method of preparing such compounds and Nucleosidin via both a nucleoside route and a sugar-nucleoside route. The generic process for both the nucleoside and sugar route is characterized by the steps of: (a) treating a 4,5-unsaturated ribofuranoside derivative with iodine monofluoride to yield the corresponding 5-deoxy-4-fluoro-5-iodo furanoside, (b) converting the 5-iodo function to a 5-hydroxy function, (c) treating the 4-fluoro-5-hydroxy product to yield the corresponding 4-fluoro-5-O-acyl-1-O-acyl or 1-halo derivative and (d) condensing the 1-O-acyl or 1-halo derivative with a suitably activated purine or pyrimidine base to yield the corresponding 4'-fluoro nucleoside.

The 4'-fluoro nucleosides exhibit general antimetabolite activity and are intermediates for compounds exhibiting such activities. The furanose compounds are intermediates for the 4'-fluoro-nucleo-sides and also for Nucleosidin.

3,817,979
7-0-DEMETHYLCELESTICETIN DERIVATIVES

Alexander D. Argoudelis, Portage; John H. Coats, and Oldrich K. Sebek, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 3, 1972, Ser. No. 215,119
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 R **3 Claims**

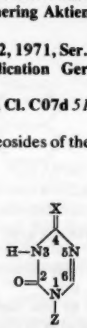
A new antibiotic 7-0-demethylcelesticetin (IV) is produced by the controlled fermentation of the new microorganism Streptomyces caelestis strain 22227*a* in an aqueous nutrient medium. 7-0-Demethylcelesticetin is antibacterially active and also can be converted to various antibacterially active analogues.

3,817,980
5-AZAPYRIMIDINE NUCLEOSIDES

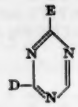
Helmut Vorbruggen, and Ulrich Niedballa, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

Filed Mar. 12, 1971, Ser. No. 123,836
Claims priority, application Germany, Mar. 14, 1970, 2012888
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **11 Claims**

5-Azapyrimidine nucleosides of the formula



wherein X is NH or an oxygen atom and Z is a free or blocked sugar residue having cytotoxic, antiviral, enzyme-inhibiting, immunosuppressive, anti-inflammatory and antipsoriatic activity are prepared by the reaction in the presence of a Lewis acid, of a 1-O-acyl-, 1-O-alkyl- or 1-holoderivative of a blocked sugar with a compound of the general formula



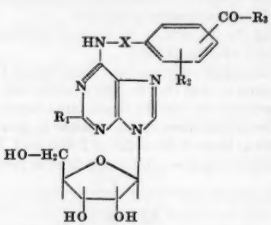
wherein D is a silylated or alkylated O-group and E is a silylated or alkylated O- or NH-group, the blocking groups of the sugar residue thereafter optionally being split off in a conventional manner to produce the corresponding free nucleoside.

3,817,981
N-(6)-ARALKYL-ADENOSINE COMPOUNDS

Wolfgang Kampe, Heddesbein; Erich Fauland, Mannheim-Waldhof; Harald Stork, Mannheim-Feudenheim; Wolfgang Juhran, Mannheim, and Karl Dietmann, Mannheim-Vogelstang, all of Germany, assignors to Boehringer Mannheim, GmbH, Mannheim, Germany

Filed Nov. 17, 1971, Ser. No. 199,727
Claims priority, application Germany, Dec. 5, 1970, 2059922
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R **18 Claims**

Novel N(6)-Aralkyl-Adenosine Compounds of the formula



(I)

wherein R_1 is hydrogen, halogen or hydroxyl; R_2 is hydrogen, halogen, hydroxyl, alkyl or alkoxy; R_3 is hydroxyl, amino, alkoxy, alkylamino or dialkylamino; and X is straight or branched-chain alkylene containing up to 3 carbon atoms; and the physiologically compatible salts thereof,

are outstandingly effective in producing a prolonged coronary vasodilating effect, and furthermore, are effective in depressing serum lipids.

3,817,982
2',3'-UNSATURATED NUCLEOSIDES AND METHOD OF MAKING

Julian P. H. Verheyden, and John G. Moffatt, both of Los Altos, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 29, 1971, Ser. No. 213,730
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 R **29 Claims**

Novel 2',3'-unsaturated nucleosides and 2',3'-dideoxy nucleosides and generic methods of preparing such compounds. The methods are characterized by the step of treating a 2'- or 3'-halonucleoside with chromous ion under reactive

conditions. The novel 2',3'-unsaturated nucleosides are useful as intermediates in the preparation of 2',3'-dideoxy nucleosides which in turn have utility as antibiotic, cytotoxic, and antiviral agents. The novel 2',3'-unsaturated nucleosides also possess selective DNA terminating properties selective for a number of viruses, and strains of bacteria, and thus are further useful as antiviral or antibiotic agents for these viruses and strains of bacteria.

3,817,983

PROCESS USING DIVERSE TYPES OF CELLULOSE FOR PREPARING VISCOSE

James TenBoreck, Jr., and Dale Roderic Laurance, both of Lawrence, Kans., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1972, Ser. No. 249,712
Int. Cl. C08b 9/00
U.S. Cl. 260—217 **11 Claims**

In a viscose manufacturing process, the additional steps of using diverse forms of cellulosic materials by ball-milling these diverse forms of cellulosic materials and subsequently adding the ball-milled material to the alkali cellulose which is prepared as an intermediate during the process of manufacturing viscose, in an amount up to about 50 percent by weight based on the combined weight of the ball-milled cellulosic material added plus the weight of the cellulose content of the alkali cellulose present.

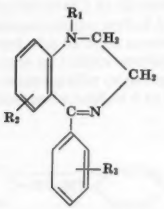
3,817,984

PROCESS FOR PRODUCING BENZODIAZEPINE DERIVATIVES

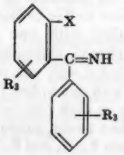
Hiroaki Moriyama; Hisao Yamamoto, both of Nishinomiya; Shigeho Inaba, Takarazuka, and Hideo Nagata, Ibaragi, all of Japan, assignors to Sumitomo Chemical Company Ltd., Osaka, Japan

Continuation of Ser. No. 840,064, July 8, 1969, abandoned. This application Feb. 28, 1972, Ser. No. 230,157
Int. Cl. C07d 53/06
U.S. Cl. 260—239 BD **11 Claims**

Novel process for producing 2,3-dihydro-III-1,4-benzodiazepine derivatives. 2,3-Dihydro-1H-1,4-benzodiazepine derivatives of the formula,



wherein R_1 is a hydrogen atom, a lower alkyl group or a cycloalkylmethyl group; R_2 is a hydrogen atom, a halogen atom, a nitro group, a lower alkoxy group or a trifluoromethyl group; and R_3 is a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group or a trifluoromethyl group, are produced by reacting a diphenylmethyleneimine derivative of the formula,



Wherein R_2 and R_3 are as defined above; and X is a halogen atom, with an ethylenediamine derivative of the formula,

$$R_1 - NH - CH_2 - CH_2 - NH_2$$

wherein R_1 is as defined above, preferably in the presence of a catalyst such as copper acetate and an acid binding agent such as anhydrous potassium carbonate, anhydrous sodium acetate, pyridine or N-ethylmorpholine.

3,817,985

NEW N-CYCLOPROPYLMETHYL AZETIDINE COMPOUNDS AND PROCESS FOR THEIR PRODUCTION

Ian Moyle Lockhart, Egham, England, assignor to Parke, Davis & Company, Detroit, Mich.

Filed Oct. 10, 1972, Ser. No. 296,181
Claims priority, application Great Britain, Dec. 3, 1971, 56354/71
Int. Cl. C07d 25/00
U.S. Cl. 260—239 A **1 Claim**

m-[1-(Cyclopropylmethyl)-3-isopentyl-3-azetidinyl]-phenol, and its acid-addition salts and phenolate salts. The compounds have pharmacological activity and exhibit a selective pattern of analgesic action. They can be produced by reducing the carbonyl group of m-[1-(cyclopropylcarbonyl)-3-isopentyl-3-azetidinyl]phenol. The starting material can be obtained by a sequence of steps beginning with the reaction of diethyl carbonate, m-methoxyphenylacetonitrile, sodium ethoxide, and 1-bromo-3-methylbutane, followed by operations to form the azetidine ring and introduce the N-cyclopropylcarbonyl group.

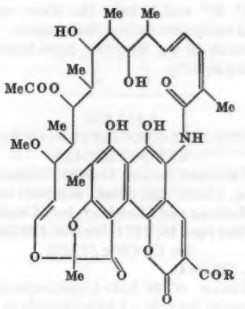
3,817,986

PYRONO-RIFAMYCINS

Renato Cricchio, Varese, Italy, assignor to Gruppo Lepetit S.p.A., Milano, Italy

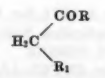
Filed Mar. 12, 1973, Ser. No. 340,591
Claims priority, application Italy, Mar. 27, 1972, 22422/72
Int. Cl. C07d 87/54
U.S. Cl. 260—239.3 P **4 Claims**

Fused pyrono derivatives of rifamycins of the formula



(I)

wherein Me is methyl and R is lower alkyl, hydroxy, or lower alkoxy; and the corresponding 25-desacetyl and 16, 17; 18, 19; 28, 29-hexahydro derivatives. The compounds are prepared by reacting 3-formylrifamycin SV or its 25-desacetyl or 16, 17; 18, 19; 28, 29-hexahydro derivative with an equimolar amount of a compound of the formula



(II)

wherein R has the same meaning as above and R_1 represents CN, COOH or $COOR_3$ wherein R_3 is a straight chain 1 to 4

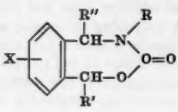
carbon atom alkyl group. The cyclization reaction is via a condensation of the $-CH_2-$group of a compound of formula (II) with the formyl group in position 3 of the rifamycin with elimination of H_2O followed by a condensation between the R_1 group and the OH group in position 4 of the rifamycin system. Depending on the nature of the R_1 group, there is an elimination of water, ammonia or a lower alcohol. The novel compounds have antimicrobial activity against gram-positive and gram-negative bacteria.

3,817,987
2,4-BENZOXAZEPINE DERIVATIVES

Luigi Fontanella, and Luigi Mariani, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

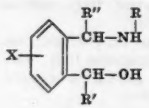
Filed May 23, 1973, Ser. No. 363,225
Claims priority, application Italy, June 23, 1972, 26110/72
Int. Cl. C07d *89/20*
U.S. Cl. 260—239.3 B **9 Claims**

2,4-Benzoxazepine derivatives of formula (I)



(I)

wherein R is hydrogen, lower alkyl or benzyl, R′ and R″ independently represent hydrogen, phenyl or substituted phenyl, not more than one of which is hydrogen and X is hydrogen, halo or lower alkoxy. The fundamental seven-membered benzoxazepine system is prepared by reacting a compound of formula (II)



(II)

wherein R, R′, R″ and X have the above meanings, with phosgene or an equivalent carbonylating agent.

The compounds of the invention have hypnotic, sedative and myorelaxing activity.

3,817,988
PROCESS FOR 11,12-ENOLISATION OF 9A-HALO-11-KETO-STEROIDS

Derek Harold Richard Barton, London, England, and Robert Henry Hesse, Cambridge, Mass., assignors to Research Institute for Medicine and Chemistry, Inc., Cambridge, Mass.

Filed Nov. 16, 1971, Ser. No. 199,299
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 C **9 Claims**

11,12-Enolisation of 9α-halo-11-keto-steroids is accomplished by treating 9α-halo-11-keto-steroids in polar, aprotic solvents with strong bases.

3,817,989
PROCESS FOR THE PRODUCTION OF 14β, 18- AND 5β, 19-(EPOXYETHANOIMINO)-STEROIDS

Hansuli Wehrli, Schaffhausen, and Oskar Jeger, Zollikerberg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 8, 1971, Ser. No. 206,170
Claims priority, application Switzerland, Dec. 14, 1970, 18469/70; Dec. 14, 1970, 18585/70
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 R **14 Claims**

A new process for the production of 14β, 18- and 5β, 19-(epoxyethanoimino)-steroids is provided, which comprises reacting corresponding thiolactams, i.e. 2′-thioxo-14β, 18- and 5β, 19-(epoxyethanoimino)-steroids, with Raney Nickel in an organic solvent. The 2′-thioxo-compounds are in turn obtained from corresponding lactams, i.e. 2′-oxo-14, 18- and 5β, 19-(epoxy-ethanoimino)-steroids, by heating with phosphorus pentasulfide in pyridine. By a specific embodiment 1′-methyl-2′-thioxo-3β-methoxy-3α, 9α-epoxy-11α, 20ξ-diacetoxy-14β, 18-(epoxyethanoimino)-5β, 17α-pregnane is converted into 1′-methyl-3β-methoxy-3α, 9α-epoxy-11α, 20ξ-diacetoxy-14β, 18-(epoxyethanoimino)-5β, 17α-pregnane.

3,817,990
TRIAZOLE BRIGHTENERS

Albert F. Strobel, and Maynard L. Whitehouse, both of Delmar, N.Y., assignors to GAF Corporation, New York, N.Y.

Filed June 17, 1970, Ser. No. 47,112
Int. Cl. C07d *51/42*
U.S. Cl. 260—240 C **7 Claims**

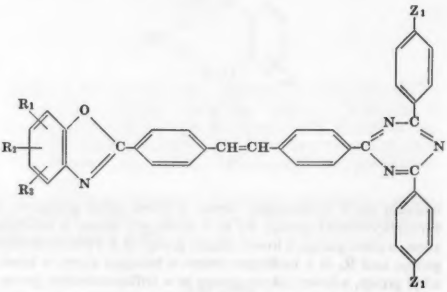
The instant invention relates to 2-(4-styrylphenyl)-2H-v-triazole[4,5-d]pyrimidin-7-ol compounds, which compounds are fluorescent pigments and, further, which compounds have brightening agent properties, and to 5-amino-2-(4-styrylphenyl)-2H-1,2,3-triazole-4-carboxamides which compounds also have brightening properties and, further, which compounds are useful in the preparation of the above-stated 2-(4-styrylphenyl)-2H-v-triazole[4,5-d]pyrimidin-7-ol.

3,817,991
BENZOXAZOLYL DERIVATIVES, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Hans Rudolf Meyer, and Adolf Emil Siegrist, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed June 21, 1971, Ser. No. 155,306
Int. Cl. C07d *55/12*
U.S. Cl. 260—240 B **5 Claims**

The invention concerns new benzoxazole derivatives of the formula



wherein R_1 and R_2 are identical or different and denote hydrogen, alkyl with one to five carbon atoms or chlorine, R_3 denotes hydrogen, alkyl with one to 12 carbon atoms, cyclohexyl, halogen, phenyl, alkylsulphonyl with one to four carbon atoms, phenylalkyl with one to four carbon atoms in the alkyl part, alkoxy with one to four carbon atoms, carboxyl, carboxylic acid esters, in each case with one substituent containing one to 18 carbon atoms, sulphonic acid and sulphonic acid amide, and wherein R_1, R_2 and R_3 in each case occupy the

positions 5, 6 or 7, and wherein Z_1 denotes a hydrogen atom, a halogen atom, alkoxy, phenyl or an alkyl group containing one to eight carbon atoms. Furthermore the invention deals with a process for their preparation. The compounds of the invention are useful as optical brighteners.

3,817,992

XANTHENE AND THIOXANTHENE DERIVATIVES

Arthur D. Sill, and Francis W. Sweet, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,128
Int. Cl. C07d *7/42, 65/16*
U.S. Cl. 260—240.1 **5 Claims**

Novel, 2,7-bis basic vinylene derivatives of xanthene and thioxanthene, their preparation and use for the prevention and inhibition of viral infections are disclosed.

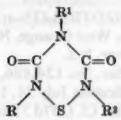
3,817,993

2,4,6-SUBSTITUTED-3,5-DIOXO-1,2,4,6-THIATRIAZINES

Hans G. Franke, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 24, 1971, Ser. No. 146,498
Int. Cl. C07d *93/00*
U.S. Cl. 260—243 R **18 Claims**

Compounds of the formula



wherein R, R^1 and R^2 are independently hydrogen; aliphatic or cycloaliphatic hydrocarbyl of 1 to 10 carbon atoms optionally substituted with halogen atoms; aryl of 6 to 15 carbon atoms optionally substituted with halogen atoms, nitro groups, alkyl groups, alkoxy groups or trifluoromethyl; or a heterocyclic group of 1 hetero oxygen, sulfur or nitrogen atoms and 4 to 5 annular carbon atoms and a total of 4 to 8 carbon atoms; find use as herbicides.

3,817,994

SUBSTITUTED (PHENYL) (2-OXAZOLIDINYL) AND (PHENYL) (2-TETRAHYDROOXAZINYL) KETONES AND LOWER ALKANOLS

Daniel M. Teller, Devon; Charles J. Guinosso, Abington; Stanley C. Bell, Penn Valley, and George H. Douglas, Paoli, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,715
Int. Cl. C07d *85/26*
U.S. Cl. 260—244 R **11 Claims**

2-Aroyloxazolidine, 2-aroyltetrahydrooxazines and 2-(α-aralkanol)-oxazolidine derivatives possessing central nervous system depressant activity are prepared by condensing substituted phenyl glyoxals with 1-amino-2-alcohols or 1-amino-3-alcohols to form a ketone and subsequently alkylating the product to the tertiary alcohol.

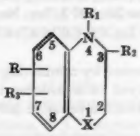
3,817,995

HYDROXY 3,4-DINYDRO-2H-1,4-BENZOXAZINES AND BENZTHIAZINES

Andree Bugaut, Boulogne sur Seine, and Francoise Estradier, Paris, both of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 847,413, Aug. 4, 1969, Pat. No. 3,690,810. This application May 17, 1972, Ser. No. 254,171
Int. Cl. C07d *87/32*
U.S. Cl. 260—244 R **3 Claims**

Oxidation dye coupling compounds for use in dyeing live human hair having the formula:



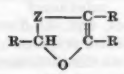
3,817,996

CYCLIZATION PROCESS

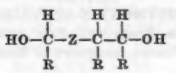
Thomas C. Snapp, Jr., Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 19, 1972, Ser. No. 290,294
Int. Cl. C07d *87/50*
U.S. Cl. 260—244 R **18 Claims**

Unsaturated cyclic compounds of the type



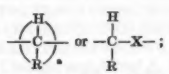
are prepared by a from the which comprises contacting a mixture of hydrogen, and a feed stock of the type



in the liquid phase at temperatures of from about 190°C. to about 240°C. in contact with a catalyst comprising:

1. a component selected fromthe group consisting of copper chromite, or copper on a support; and
2. a tungstic acid.

In the above formulas, Z is the radical



R is H or an alkyl radical containing 1 to 4 carbon atoms; a is a number from 1 to 3 and X is either —0—, or the radical

R can be either the same or different at different locations within the molecule. The unsaturated ring products formed by this process, of which p-dioxene is a typical member, are valu-

able intermediates in the preparation of polymers useful, for example, as viscosity improvers for motor oils and in oxonation and epoxidation reactions to yield cyclic aldehydes and alcohols which are useful, for example, as plasticizers, surface active agents and adhesives.

3,817,997

PROCESS FOR PREPARING DIMORPHOLINODIETHYL ETHER

Sheldon D. Carlson, Woodridge, Ill., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

Filed June 26, 1972, Ser. No. 266,311

Int. Cl. C07d *87/40*

U.S. Cl. 260—246 B **4 Claims**

Amine residues formed by contacting diethylene glycol and ammonia are employed in a process to provide 2,2'-bis(4-morpholino)diethyl ether, a valuable polyurethane catalyst.

3,817,998

2-AMINO AND SUBSTITUTED AMINO-4, 6-DIAMINO-5-PYRIMIDINESULFONAMIDES

Paul L. Anderson, Dover, and Robert E. Manning, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 193,555, Oct. 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 108,221, Jan. 20, 1971, abandoned. This application Dec. 6, 1971, Ser. No. 205,323

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **2 Claims**

2-Amino and substituted amino-4,6-diamino-5-pyrimidinesulfonamides, e.g., 4,6-diamino-2-methylamino-5-pyrimidinesulfonamide, are prepared by treating 4,6-diamino-2-methylsulfonyl-5-pyrimidinesulfonamide with ammonia or substituted amines and are useful as anti-hypertensives.

3,817,999

-2-OXY-3-METHOXY-5-ALLYL-BENZAMIDES

Francois Clemence, Rosny-Sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel UCLAF, Paris, France

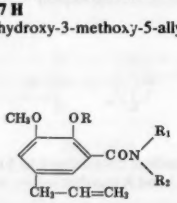
Continuation-in-part of Ser. No. 762,606, Sept. 25, 1968, Pat. No. 3,668,238, which is a continuation-in-part of Ser. No. 743,576, June 6, 1968, abandoned. This application Sept. 28, 1971, Ser. No. 184,619

Claims priority, application France, June 6, 1967, 67.109297; Sept. 6, 1967, 67.120154

Int. Cl. C07d *87/34*

U.S. Cl. 260—247.7 H **4 Claims**

An amide of 2-hydroxy-3-methoxy-5-allyl-benzoic acid of the formula



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 7 carbon atoms and acyl of an organic carboxylic acid of 1 to 18 carbon atoms, R_1 and R_2 taken together with the nitrogen atom form a heterocyclic which may contain another heteroatom, which products possess outstanding choleretic properties far superior to dehydrocholic acid.

3,818,000

3-ALKOXY-OR 3-ARYLOXY-2-(DIARYL-HYDROXY)-METHYL-PROPYLAMINES

Roland Yves Mauvernay, Riom; Norbert Busch, Loubeyrat; Jacques Simond, Chamalieres, and Jacques Moleyre, Nozac, all of France, assignors to Centre Europeen De Recherches Mauvernay C.E.R.M.

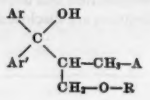
Division of Ser. No. 447, Jan. 2, 1970, Pat. No. 3,676,496. This application Mar. 28, 1972, Ser. No. 238,969

Claims priority, application Great Britain, Jan. 3, 1969, 452/69

Int. Cl. C07d *87/32*

U.S. Cl. 260—247.7 C **1 Claim**

A 3-alkoxy- or 3-aryloxy-2-(diaryl-hydroxy)-methyl-propylamine of the formula



in which Ar and Ar', which may be the same or different, are unsubstituted or substituted aryl groups, R is an aliphatic, aryl or arylaliphatic group, and A is a secondary or tertiary amino group, or an acid addition salt thereof. The compound has coronarodilating properties and central nervous system activity.

3,818,001

1,2,3-BENZOTRIAZIN-4(3H)-ONES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation of Ser. No. 124,486, March 15, 1971, abandoned. This application July 24, 1972, Ser. No. 274,312

Int. Cl. C07d *55/08*

U.S. Cl. 260—247.7 A **17 Claims**

Disclosed are compounds of the class of 1,2,3-benzotriazin-4(3H)-ones which are substituted at the 3- position and which are substituted at at least two of the 6,7 and 8- positions by alkoxy or by an adjacent methylenedioxy, e.g. 6,7-dimethoxy-3-(3-morpholinopropylamino)-1,2,3-benzotriazin-4(3H)-one. The compounds have pharmacological activity in animals, e.g. anti-inflammatory activity. The compounds may be prepared, for example, by alkylation of the corresponding 3-unsubstituted compounds and by reaction of an appropriately disubstituted anthranil amide with sodium nitrite and a strong inorganic acid, e.g. sulfuric acid.

3,818,002

PRODUCTION OF DRY SODIUM DICHLOROISOCYANURATE

Horst Goelz, Schwetzingen; Dieter Stockburger, Gruenstadt; Manfred Saeuberlich, Beindersheim; Frank Mueller, Maxdorf; Hartwig Fuchs, and Karl Von Erden, both of Ludwigshafen, all of Germany, assignors to Badische Anilin-Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Land Rheinland-Pfalz, Germany

Filed Oct. 29, 1971, Ser. No. 193,997

Claims priority, application Germany, Nov. 3, 1970, 2053983

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 C **5 Claims**

Production of dry sodium dichloroisocyanurate by spray-drying and up to 50 percent w/w aqueous solution or sussion of the salt in a fluidized bed maintained by inert gases and consisting of finely divided dry sodium dichloroisocyanurate, at from 100° to 300°C.

3,818,003

TRIAZINO[4,3-A][1,4]BENZODIAZEPIN-2(1H)-ONES

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 3, 1972, Ser. No. 215,118
Int. Cl. C07d 57/34
U.S. Cl. 260—248 AS 8 Claims

Novel 7-substituted-3,5-dihydro-as-triazino[4,3-a]-[1,4]benzodiazepin-2(1H)-ones, 7-substituted-3,5-dihydro-as-triazino[4,3-a][1,4]benzodiazepine-2(1H)-thiones, the 6-oxide derivatives thereof, the intermediate 5-substituted-2,3-dihydro-2-thioxo-1H-1,4-benzodiazepine-1-acetic acid alkyl esters, pharmacologically acceptable acid addition salts thereof, and processes for the production thereof. The compounds of this invention and the pharmacologically acceptable acid addition salts thereof are central nervous system depressants which are useful as sedatives, hypnotics, tranquilizers, muscle relaxants and anticonvulsants. They are also useful as feed additives for increasing growth rate and feed efficiency of livestock and poultry, milk production in mammals and egg production in birds.

3,818,004

PRODUCTION OF SODIUM DICHLOROISOCYANURATE DIHYDRATE

Sidney Berkowitz, Highland Park, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,379
Int. Cl. C07d 55/40
U.S. Cl. 260—248 C 1 Claim

Anhydrous sodium dichloroisocyanurate is converted to the relatively stable dihydrate by controlled hydration under conditions which keep the temperature above freezing and not in excess of 40°C.

3,818,005

NITRILE TRIMERIZATION PROCESS

Gordon H. Miller, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,600
Int. Cl. C07d 55/50
U.S. Cl. 260—248 CS 14 Claims

Aromatic nitriles, such as terephthalonitrile, isophthalonitrile, benzonitrile, etc., are trimerized to the corresponding 1,3,5-triazine by heating the nitrile in the presence of a copper carbonate catalyst.

3,818,006

N-HYDROXY-AMINO-S-TRIAZINES

Peter Klemchuk, 148 Upland Rd., Yorktown Heights, N.Y. 10598

Division of Ser. No. 133,700, April 13, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 296,448
Int. Cl. C07d 55/18, 55/20
U.S. Cl. 260—249.5 2 Claims

Substituted hydroxylamines exhibit activity as anti-oxidants for a diverse group of substrate materials under specific conditions of exposure to an oxidizing environment. Illustrative embodiments of substituted hydroxylamine anti-oxidants are bis(p-nitrobenzyl)hydroxylamine and 2-diethylamino-4,6,-bis(N-n-propyl-N-hydroxyamino)-s-triazine.

3,818,007

HYDROXYALKYL ESTERS OF QUINOXALINE-DI-N-OXIDE-2-CARBOXYLIC ACID

Timothy H. Cronin, East Lyme, and Kenneth Richardson, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 20,841, March 18, 1970, abandoned. This application Apr. 20, 1971, Ser. No. 135,792
Int. Cl. C07d 51/78
U.S. Cl. 260—250 R 8 Claims

Novel alkyl esters of quinoxaline-di-N-oxide-2-carboxylic acid substituted on the alkyl portion of the ester by hydroxy, acyloxy, n-alkyl carbamyloxy, dialkylaminoacyloxy, carboxyacyloxy, alkoxycarbonyloxy, haloacyloxy, amino and mono- and disubstituted amino, useful as antibacterial agents and in promoting growth and improving feed efficiency of animals in general.

3,818,008

1-PHENYLHEXAHYDRO-PYRIDAZINES

Marcel K. Eberle, Madison, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 95,407, Dec. 4, 1970, Pat. No. 3,663,567, which is a continuation-in-part of Ser. No. 866,020, Oct. 13, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,381
Int. Cl. C07d 51/04, 27/54
U.S. Cl. 260—250 A 2 Claims

The invention discloses novel process for preparation of N-substituted cycloalkanoindoles including novel compounds of said type exhibiting pharmaceutical activity in animals and also useful as intermediates. Also disclosed are novel 1-phenylhexahydropyridazines useful as intermediates in the process.

3,818,009

ALPHA, ALPHA-DISUBSTITUTED-5-PYRIMIDINEMETHANES

Harold M. Taylor; James D. Davenport, and Ronald E. Hackler, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 888,949, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 829,844, May 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 685,315, Nov. 24, 1967, abandoned, which is a continuation-in-part of Ser. No. 634,074, April 27, 1967, abandoned. This application Mar. 13, 1972, Ser. No. 234,339
Int. Cl. C07d 51/36
U.S. Cl. 260—25 R 46 Claims

There is disclosed a class of α,α-disubstituted-5-pyrimidinemethanes and substituted methanes which are useful as fungicides, bactericides, herbicides, and plant growth regulators. Internodal elongation of plants is inhibited by treatment with a compound of this invention.

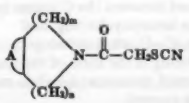
3,818,010

FUNGICIDAL COMPOSITIONS AND METHOD OF COMBATTING FUNGI USING SUBSTITUTED TETRAHYDROQUINOLINES AND TETRAHYDROISOQUINOLINES

Sidney B. Richter, Chicago, and Alfred A. Levin, Skokie, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 732,822, May 29, 1968, abandoned. This application July 26, 1971, Ser. No. 176,771
Int. Cl. A01n 9/18, 9/22
U.S. Cl. 424—258 6 Claims

Chemical compositions of the formula



wherein each R is selected from the group consisting of hydrogen and alkyl; A forms a substituted or unsubstituted hydrocarbon ring of six carbon atoms wherein the substituents are selected from the group consisting of alkyl, alkenyl, halogen, haloalkyl, alkoxy, nitro, and dialkylamino; m is an integer from 1 to 3; n is an integer from 0 to 1; and $m + n$ is an integer from 2 to 3. A fungicidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to fungi, a compound of the above description. A method for the control of fungi which comprises applying to said fungi a fungicidal composition comprising an inert carrier and, in a quantity toxic to fungi a compound heretofore described.

3,818,011

PIPERAZIN-1-YL CARBONYLOXY-ISOINDOLIN-1-ONES

Jean-Louis Challier, Thais; Claude Jenmart, Brunoy; Mayer Naoum Messer, Bievres, and Pierre Simon, Montrouge, all of France, assignors to Rhone-Poulenc S. A., Paris, France

Filed Dec. 14, 1971, Ser. No. 207,979

Claims priority, application France, Dec. 14, 1970, 70.44949

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BC **5 Claims**

Isoindolin-1-one derivatives with a phenyl or substituted phenyl radical on the 2-position nitrogen atom, optionally carrying on the benzene moiety of the heterocyclic radical substituents selected from halogen, alkyl and nitro, and a grouping —O—CO—NR_1R_2 on the 3-position carbon atom, R_1 being hydrogen or alkyl, R_2 being alkyl or dialkylaminoalkyl, or —NR_1R_2 in toto being a mononuclear heterocyclic group, preferably 4 1alkylpiperazin-1-yl, possess useful pharmacological properties as tranquilisers and anti-convulsant agents.

3,818,012

1,2-DIHYDRO-8-CARBAMOYLOXYQUINOLINES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

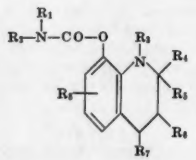
Filed Sept. 7, 1971, Ser. No. 178,427

Claims priority, application Switzerland, Sept. 10, 1970, 13491/70; Aug. 4, 1971, 11467/71

Int. Cl. C07d *33/40*

U.S. Cl. 260—283 CN **13 Claims**

Heterocyclic compounds of the formula



(I)

wherein R_1 is hydrogen, C_1–C_4 alkyl, C_3–C_5 alkenyl or C_3–C_5 alkinyl,

R_2 is hydrogen, C_1–C_4 alkyl or optionally substituted C_1–C_6 acyl,

R_3 is hydrogen, C_1–C_6 alkyl optionally substituted by C_1–C_4 alkoxy groups or cyano, C_3–C_5 alkenyl or C_3–C_5 alkinyl,

R_4 and R_5 are each hydrogen or C_1–C_4 alkyl,

R_6 and R_7 are each hydrogen or C_1–C_4 alkyl or together are a further bond between the C atoms to which they are attached in the heterocyclic ring, and

R_8 is hydrogen, C_1–C_4 alkyl or halogen,

The compound being in the form of the free base or of an acid addition salt thereof, processes for their manufacture and use as agents for pest control.

3,818,013

2-SUBSTITUTED-CINCHONA ALKALOIDS

John P. Yardley, King of Prussia; Royal E. Bright, Philadelphia; Richard W. Rees, and Herchel Smith, both of Bryn Mawr, all of Pa., assignors to American Home Products Corp., New York, N.Y.

Division of Ser. No. 27,119, April 9, 1970, Pat. No. 3,643,552, which is a continuation-in-part of Ser. No. 692,277, Dec. 21, 1967, abandoned. This application Feb. 29, 1972, Ser. No. 230,467

Int. Cl. C07d *43/24*

U.S. Cl. 260—284 **9 Claims**

2'-Substituted alkaloids of the cinchona series, especially 2'-substituted quinine, quinidine, cinchonine, cinchonidine and their dihydro analogs, and their salts, are prepared by treating ar-N-oxides of the alkaloids with the corresponding organometallic reagent and, if desired, converting the free bases thus formed into pharmaceutically acceptable acid addition salts. The new compounds are pharmacologically active, especially anti-malarially and anti-arrhythmically.

3,818,014

2-QUINOLYL-4(5)-TRIFLUOROMETHYLIMIDAZOLES

John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co. Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 885,362, Dec. 15, 1969, abandoned. This application June 21, 1972, Ser. No. 265,016

Int. Cl. C07d *33/50, 57/04*

U.S. Cl. 260—288 R **4 Claims**

4(5)-Trifluoromethylimidazoles having optional substituents in the 1 and 2 positions are provided. The novel 4(5)-trifluoromethylimidazoles are prepared by reacting a 1,1-dihalo-3,3,3-trifluoroacetone compound with an appropriate carboxaldehyde and ammonia. The 4(5)-trifluoromethylimidazoles are useful as anti-gout and anti-hyperuricemic agents.

3,818,015

1(POLYMETHOXYBENZYL) 6 HYDROXYL 1,2,3,4 TETRAHYDRO ISOQUINOLINES

Eisaku Yamato, Yono; Masao Wada, Warabi; Toshio Sekiguchi, Omiya; Masanori Sato, Toda; Taku Nagao, Ageo; Hiromichi Nakajima, Yono; Akio Kiyomoto, Musashino, and Masazumi Kawanishi, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

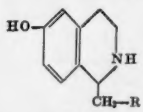
Filed Dec. 7, 1971, Ser. No. 205,704

Claims priority, application Japan, Dec. 17, 1970, 45-113378

Int. Cl. C07d *35/00*

U.S. Cl. 260—289 R **7 Claims**

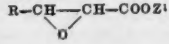
A tetrahydroisoquinoline compound of the formula:



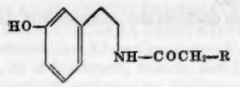
(I)

wherein R is a trimethoxyphenyl, dimethoxyphenyl or methylene-dioxyphenyl radical, and pharmaceutically acceptable acid addition salts thereof. These compounds are peripheral vasodilators and are particularly effective in increasing the cerebral blood flow.

The compound (I) is prepared by condensing three-hydroxyphenethylamine with a phenylglycidic acid compound of the formula;



wherein Z^1 is an alkyl radical or an alkali metal, and R has the same meaning as defined above. Alternatively, the compound (I) may be prepared by dehydrating the compound of the formula;



wherein R has the same meaning as defined above, followed by hydrogenation of the resultant dihydroisoquinoline compound.

3,818,016
HALOGENATED PYRIDINE DERIVATIVES

Roy Dennis Bowden, and Thomas Seaton, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 14, 1972, Ser. No. 280,197
Claims priority, application Great Britain, Aug. 25, 1971, 39839/71; Mar. 15, 1972, 12080/72
Int. Cl. C07d *31/26*
U.S. Cl. 260—290 HL **15 Claims**

Bromofluoropyridines are prepared by vapour-phase bromination of fluoropyridines at a temperature of at least 300°C, the fluoropyridines haeing 1 to 4 fluorine atoms in the pyridine ring and having at least one unsubstituted hydrogen and/or a chlorine atom in the pyridine ring.

3,818,017
1-[1-(2-HYDROXY-3-ARYLOXYPROPYL)-4-PIPERIDYL]-2-BENZIMIDAZOLINONES AND RELATED COMPOUNDS

Paul Adriaan Jan Janssen, Vosselaar; van Ineke Wijngaarden, Beerse, and Willem Soudijn, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Filed Jan. 4, 1973, Ser. No. 321,059
Int. Cl. C07d *29/30, 31/44*
U.S. Cl. 260—293.6 **18 Claims**

Compounds of the class of 1-[1-(2-hydroxy-3-aryloxypropyl)-4-piperidyl]- and 1-[1,2,3,6-tetrahydro-1-(2-hydroxy-3-aryloxypropyl)-4-pyridyl]-2-benzimidazolinones, useful as anti-hypertensive agents.

3,818,018
ADDUCTS OF BIS-(2-PYRIDYL-1-OXIDE) DISULFIDE WITH ALKALINE EARTH METAL SALTS

Guenther K. Weisse, Northford; Haywood Hooks, Jr., West Haven; Gene A. Hyde, Hamden, and Samuel I. Trotz, Orange, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 18, 1971, Ser. No. 190,382
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 J **6 Claims**

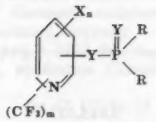
This invention pertains to adducts of bis-(2-pyridyl-1-oxide) disulfide with alkaline earth metal salts, the method of their preparation and formulations containing such adducts.

3,818,019
CERTAIN (TRIFLUOROMETHYL-PYRIDYL)-PHOSPHORAMIDATES AND PHOSPHORAMIDOTHIOATES

Raymond H. Rigterink, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 203,904, Dec. 1, 1971, Pat. No. 3,743,648, which is a continuation-in-part of Ser. No. 99,668, Dec. 18, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,847
Int. Cl. C07d *31/50, 31/42*
U.S. Cl. 260—294.8 K **6 Claims**

Novel substituted (trifluoromethyl)pyridyl phosphates and phosphorothioates of the formula:



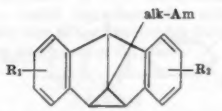
wherein Y and Z each independently represent oxygen or sulfur; each R independently represents loweralkoxy, loweralkylthio, loweralkylamino or amino; each X independently represents hydrogen, bromo, chloro or fluoro; n represents an integer of from 0 to 3, both inclusive, and m represents an integer of 1 or 2. The compounds are suitable for use as pesticides in the control of various mite, tick, insect, bacterial and fungal organisms and nematodes.

3,818,020
1-AMINOALKYL-DIBENZOSEMI-BULLUALENES AND THE SALTS THEREOF

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 30,988, April 22, 1970, which is a continuation-in-part of Ser. No. 854,270, Aug. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 779,257, Nov. 26, 1968, abandoned. This application Mar. 12, 1971, Ser. No. 123,822
Int. Cl. C07c *87/28*
U.S. Cl. 260—295.5 S **9 Claims**

1-Aminoalkyl-dibenzosemibullvalenes, e.g., those of the formula



Am = an amino group
alk = alkylene
$R_{1,2}$ = H, alkyl, free, etherified or esterified oOh or SH, CF_3, NO_2, amino or acyl

acyl derivatives, N-oxides, quaternaries and salts thereof are antidepressants.

3,818,021

ALKOXY PHENOXY ACETAMIDES

Germaine Thuillier, born Nachmias, Paris, and Francoise Geffroy, born Remy, Val De Marne, both of France, assignors to C. E. R. P. H. A. (Centre Europeen de Recherches Pharmacologiques), Archueil Val de Marne, France

Filed Dec. 24, 1969, Ser. No. 888,064

Claims priority, application France, Dec. 26, 1968, 68.180720

Int. Cl. C07c *103/26*

U.S. Cl. 260—295 S 4 Claims

Alkoxy phenoxy acetamides in which the amido group carries a substituted phenyl substituant and a amino alkyl substituent, of which the amino group is dialkyl substituted or is an N-heterocyclic ring, are described together with methods for their production. The compounds are of pharmaceutical value for example as local anaesthetics, antispasmodics, anticoagulants, antidepressive agents and diuretics.

3,818,022

1H-IMIDAZO(4,5-BETA)PYRIDINE DERIVATIVES

George O. P. Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 181,638, Sept. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 100,410, Dec. 21, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,195

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 H 6 Claims

Ethers and esters of 1-hydroxy-2-(1,1-difluoroalkyl)-1H-imidazo(4,5-b)pyridine compounds, useful as herbicides.

3,818,023

2-PHENYL BENZOTHIAZOLYL ACETIC ACID DERIVATIVES

Jin Wada, Kishigaya; Tadayuki Suzuki, and Hiroki Miyamats, both of Tokyo, all of Japan, assignors to Tokyo Tanabe Company, Limited, Tokyo, Japan

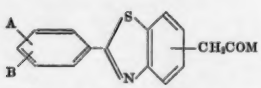
Filed Sept. 8, 1971, Ser. No. 178,810

Claims priority, application Japan, June 24, 1971, 46-45264

Int. Cl. C07d *91/44*

U.S. Cl. 260—304 10 Claims

A compound of the formula



in which A as well as B are hydrogen, lower alkyl, hydroxy, lower alkoxy, halogen or di(lower alkyl)amino; M is OH, NH_2 or OZ where Z is alkali metal, aluminum, alkaline earth metal, diethylammonium, ethylenediammonium or triethanolammonium; and acetic acid radical is attached at the 5- or 6-position of benzothiazole ring. These compounds are useful for medicines and have anti-inflammatory activity, analgesic activity and antipyretic activity.

3,818,024

BENZOTHIAZOL SUBSTITUTED THIADIAZOLIDINES

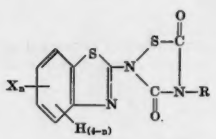
John Krenzer, Oak Park, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 16, 1972, Ser. No. 226,962

Int. Cl. C07d *99/06*

U.S. Cl. 260—305 6 Claims

This invention discloses new compounds of the formula



wherein X is selected from the group consisting of alkyl, halogen, and alkoxy; *n* is an integer from 0 to 4 and R is alkyl. Further disclosed are herbicidal compositions utilizing as an essential active ingredient a compound of the above description.

3,818,025

PROCESS FOR THE RAPID PRODUCTION OF 2-MERCAPTOBENZOTHIAZOLE

Makoto Sugahara, Nishinomiya; Kenjiro Mori, Takarazuka, and Morisue Nagata, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-shi, Osaka-fu, Japan

Filed Apr. 29, 1971, Ser. No. 138,818

Int. Cl. C07d *91/48*

U.S. Cl. 260—306 10 Claims

In the production of 2-mercaptobenzothiazole by the reaction of aniline, carbon disulfide and sulfur at a high temperature under an elevated pressure, a process which is characterized in that the reaction is carried out first at 250° to 300° C and then at 200° to 240° C. By such process, 2-mercaptobenzothiazole is produced in an excellent yield with a high productivity.

3,818,026

3-(2,4-DICHLORO-5-PROPARGYLOXY-PHENYL) OXADIAZOLONE DERIVATIVES USEFUL AS HERBICIDES

Roger Boesch, Vitry sur Seine, France, assignor to Rhone-Poulenc S. A., Paris, France

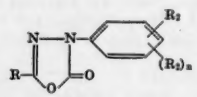
Filed May 31, 1972, Ser. No. 258,309

Claims priority, application France, June 2, 1971, 71.19980

Int. Cl. C07d *85/54*

U.S. Cl. 260—307 A 5 Claims

An oxadiazolone derivative of the formula:



wherein R is alkyl of one through four carbon atoms or alkenyl of two through four carbon atoms, R_1 is alkynyloxy of three or

four carbon atoms, R_2 is halogen or alkynyloxy of three or four carbon atoms, and *n* is zero or an integer from 1 through 4, possess herbicidal properties and are especially useful for combatting grasses.

3,818,027
PROCESSES AND INTERMEDIATES FOR SULFONYLUREA DERIVATIVES

Hermann Bretschneider; Klaus Grassmayr; Kraft Hohenlohe-Oehringen, all of Innsbruck, Austria, and Andre Grussner, Basel, Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

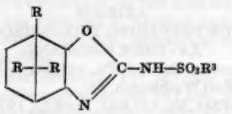
Division of Ser. No. 818,141, April 21, 1969, Pat. No. 3,654,357. This application Oct. 29, 1971, Ser. No. 194,055

Claims priority, application Switzerland, Apr. 26, 1968, 6285/68

Int. Cl. C07d *85/48*

U.S. Cl. 260—307 D **4 Claims**

Intermediates of the formula



wherein R and R^3 are as herein after set forth, useful for preparing bicyclic sulfonylurea derivatives, are described. The bicyclic sulfonylurea end products are useful as hypoglycemic agents.

3,818,028
SUBSTITUTED-5-(2,4,6-TRIHALOPHENOXY)-METHYL)-2-OXAZOLINE COMPOUNDS

Herman Eldridge Faith, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 1, 1972, Ser. No. 302,873

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F **6 Claims**

Substituted-5-[(2,4,6-trihalophenoxy)methyl]-2-oxazoline compounds and their pharmaceutically acceptable salts, such as 2-amino-5-[(2,4,6-trichlorophenoxy)methyl]-2-oxazoline and 2-(imino)-5-[(2,4,6-trichlorophenoxy)methyl]-3-methyl-2-oxazolidine hydrobromide are prepared by the reaction of a substituted 1-amino-3-(2,4,5-trihalophenoxy)-2-propanol with cyanogen bromide. The novel compounds have central nervous system activity and are useful as antidepressants.

3,818,029
IMIDAZOLYL-KETOXIME-CARBAMATES

Erik Regel; Karl Heinz Buchel, both of Wuppertal-Elberfeld; Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Bayer Aktiegesellschaft, Leverkusen, Germany

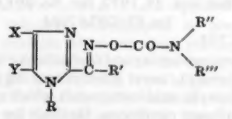
Filed Jan. 4, 1972, Ser. No. 215,437

Claims priority, application Germany, Jan. 12, 1971, 2101111

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **7 Claims**

Imidazolyl-ketoxime-carbamates of the general formula



(I)

in which

X and Y each independently is hydrogen, halogen, methyl, ethyl or optionally substituted aryl, or

X and Y together constitute a $(CH)_4$ group forming a fused benzene ring with the two imidazole-ring carbon atoms to which they are attached,

R and R'' each independently is alkyl or alkenyl with up to 6 carbon atoms; or aryl or aralkyl optionally carrying at least one halogen, nitro or alkyl substituent,

R' is alkyl, haloalkyl, optionally substituted aryl or a five- or six-membered heteroaromatic ring optionally carrying at least one halogen, alkyl, aryl or substituted aryl substituent, and

R''' is hydrogen, or alkyl or alkenyl with up to four carbon atoms, which possess insecticidal, acaricidal and bactericidal properties.

3,818,030
1-IMIDAZOYL-METHANEPHOSPHONIC ACID ESTERS

Helmut Timmler, Wuppertal-Vohwinkel; Karl Heinz Buchel, Wuppertal-Elberfeld, and Manfred Piempel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

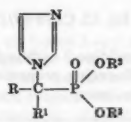
Filed Aug. 3, 1972, Ser. No. 277,630

Claims priority, application Germany, Aug. 14, 1971, 2140865

Int. Cl. C07f *9/38*

U.S. Cl. 260—309 **10 Claims**

1-imidazolyl-methanephosphonic acid esters of the formula



and their salts, especially the acid salts, wherein R is unsubstituted or substituted phenyl, R^1 is unsubstituted or substituted phenyl or an unsubstituted or substituted 5-, 6- or 7-membered heterocycle and R^2 and R^3 are the same or different and each is alkyl or cycloalkyl, are useful as antimycotics.

3,818,031
IMIDAZOLIDINETRIONECARBOXYLIC ACID DERIVATIVES

Toni Baerlocher, Oberwil, Baselland, Switzerland, and Edith Ebert, Loerrach-Stetten, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,926

Claims priority, application Switzerland, Mar. 26, 1971, 4514/71; May 6, 1971, 11653/71

Int. Cl. C07d *49/30*

U.S. Cl. 260—309.5 **32 Claims**

Esters and thioesters of 2,4,5-trioxo-imidazolidin-3-carbonic acid are useful ingredients for influencing plant metabolism. They may be used preferably for fruit abscission and for inhibiting senescence of cut plants.

3,818,032
SUBSTITUTED 1-PHENYL-2,5-DIOXO IMIDAZOLIDINES

Hans Moser, Basel, and Christian Vogel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,275

Claims priority, application Switzerland, Mar. 16, 1971, 3856/71

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 **20 Claims**

Substituted 1-phenyl-2,5-dioxo-imidazolidines are effective weed-killers in crop plant cultures. They may be used in the form of herbicidal agents.

3,818,033

5(4)-AMINO-SUBSTITUTED IMIDAZOLES

James Heyes, Peaslake, and Neal Ward, Tadworth, both of England, assignors to Beecham Group Limited, Middlesex, England

Filed Aug. 23, 1971, Ser. No. 174,254

Claims priority, application Great Britain, Aug. 27, 1970, 41260/70

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 13 Claims

5(4)-amino-substituted imidazoles are disclosed which are useful as anthelmintics particularly against nematodes. Certain of these imidazole derivatives are novel per se. Pharmaceutical compositions comprising the 5(4)-amino-substituted imidazoles in combination with a pharmaceutically acceptable carrier, diluent or excipient are disclosed as well as methods of treating helminthiosis in animals utilizing these compositions.

3,818,034

2,4,5-TRIOXO-IMIDAZOLIDINE-3-CARBOXYLIC ACID AMIDES

Toni Barlocher, Oberwil, Switzerland, and Edith Ebert, Lorrach-Stetten, Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,640

Claims priority, application Switzerland, Sept. 30, 1971, 14214/71

Int. Cl. C07d *49/30*

U.S. Cl. 260—309.5 3 Claims

2,4,5-trioxo-imidazolidine-3-carboxylic acid amides possess plant metabolism influencing properties. They may be used for regulating fruit abscission.

3,818,035

2[(2-ALKYLBENZO[B] FURAN-3 YL)METHYL]-Δ^2 IMIDAZOLINE

Fernand Binon, Strombeek-Bever, and Alex Areschka, Brussels, both of Belgium, assignors to Labaz, Paris, France

Filed Jan. 10, 1972, Ser. No. 216,795

Claims priority, application Great Britain, Jan. 27, 1971, 3327/71

Int. Cl. C09d *49/34*

U.S. Cl. 260—309.6 2 Claims

2-[(2-Alkylbenzo[b]furan-3-yl)methyl]-Δ^2-imidazolines and salts thereof are peripheral vasoconstrictors useful for the relief of congestion of the nasal mucosa. They are produced from 2-alkylbenzo[b]furans by reaction with HCl and trioxane to form 2-alkyl-3-chloromethylbenzo[b]furans which are converted, by reaction with KCN in the presence of KI, to 2-alkyl-3-cyanomethylbenzo[b]furans which, on treatment with HCl in alcohol, produce the desired imidazoline derivatives.

3,818,036

PRODUCTION OF BENZOXETANE-2-SPIRO-2 -(1,3-DIAZOCYCLOALKANES)

Helmut Hagen, Frankenthal, and Friedrich Becke, Heidelberg, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed July 2, 1971, Ser. No. 159,496

Claims priority, application Germany, July 14, 1970, 20345758

Int. Cl. C07d *51/18*

U.S. Cl. 260—309.7 9 Claims

Benzoxetane 2-spiro-2'-(1',3'-diazacycloalkanes) by prepared reaction of a salicyl-aldehyde with a diaminoalkane and sulfur and the benzoxetane-2-spiro-2'-(1',3'-diazacycloalkanes). The compounds obtainable by the process of the invention, such as benzoxetane-2-spiro-2'-imidazolidine and its 4,6-dichloro-substituted derivative or benzoxetane-2-spiro-2'-hexahydropyrimidine and its 4,6-dichloro-substituted derivative, are auxiliaries for the textile industry, plant protection agents and valuable starting materials for the production of plant protection agents and dyes.

3,818,037

3-METHYLENE-6-NITRO-N-SUBSTITUTED ISOINDOLONES-(1)

Ernst Schefczik, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Nov. 8, 1971, Ser. No. 196,787

Int. Cl. C07d *27/50*

U.S. Cl. 260—325 1 Claim

3-methylene-6-nitro-N-substituted isoindolones-(1) produced by reacting 6-nitro-N-substituted isoindolones-(1) with formaldehyde or an agent yielding formaldehyde. The new compounds are starting materials for the production of dyes.

3,818,038

PROCESS FOR PREPARING 2-OXOSPIRO[INDOLINE-3,4'-THIOCHROMANS]

Vasken Paragamian, Dresher, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Division of Ser. No. 137,043, April 23, 1971, Pat. No. 3,723,459. This application July 21, 1972, Ser. No. 274,021

Int. Cl. C07d *27/40*

U.S. Cl. 260—325 2 Claims

6,7-Dihydro-12H[1]benzothiepino-[5,4-b]indole-5-oxides are utilized as precursors for making certain 2-oxospiro[indoline-3,4'-thiochroman]derivatives, of which the ester and nitrile derivatives are useful as inhibitors of gastric acid secretion and the acid derivatives are useful as precursors for making the ester derivatives.

3,818,039

PROCESS FOR PREPARING 2-OXOSPIRO[INDOLINE-3,4'-THIOCHROMANS]

Vasken Paragamian, Dresher, Pa., assignor to McNeil Laboratories, Inc., Fort Washington, Pa.

Division of Ser. No. 137,043, April 23, 1971, Pat. No. 3,723,459. This application July 21, 1972, Ser. No. 274,022

Int. Cl. C07d *27/40*

U.S. Cl. 260—325 1 Claim

6,7-Dihydro-12H[1]benzothiepino-[5,4-b]indole-5-oxides are utilized as precursors for making certain 2-oxospiro[indoline-3,4'-thiochroman] derivatives, of which the ester and nitrile derivatives are useful as inhibitors of gastric acid secretion and the acid derivatives are useful as precursors for making the ester derivatives.

3,818,040

ALKENYL AND ALKYNYL SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex Corporation, Apartodo, Panama

Filed Sept. 25, 1972, Ser. No. 291,618

Int. Cl. C07d *7/44*

U.S. Cl. 260—335 14 Claims

Compositions containing and methods employing, as the essential ingredient(s), novel alkenyl and alkynyl substituted xanthone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing these compounds and compositions and intermediates therein are also disclosed. 7-Vinylxanthone-2-carboxylic acid and 5-ethynylxanthone-2-carboxylic acid are illustrated as representative of the class.

3,818,041

PROCESS FOR PREPARING AROMATIC CYCLIC THIONES

Ellis K. Fields, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Continuation of Ser. No. 856,843, Sept. 10, 1969. This application Oct. 24, 1972, Ser. No. 300,188
Int. Cl. C07d 71/00
U.S. Cl. 260—327 C 6 Claims

Aromatic cyclic thiones are synthesized and a process for preparing them by the thermal conversion of aromatic carboxylic acid anhydride to its aryne form and reaction therewith of carbon disulfide is described. The products are useful as bactericides and as extreme-pressure additives in lubricating compositions.

3,818,042

XANTHONE CARBOXYLIC ACIDS AND DERIVATIVES

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.), Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 217,383, Jan. 12, 1972, which is a continuation-in-part of Ser. No. 162,696, July 14, 1971, abandoned. This application June 5, 1972, Ser. No. 259,853
Int. Cl. C07d 7/44
U.S. Cl. 260—335. 14 Claims

Compositions containing and methods employing, as the essential ingredient, xanthone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing these compounds and compositions are also disclosed. 7-Acetylxanthone-2-carboxylic acid is illustrated as representative of the class.

3,818,043

CUPROUS CHLORIDE AS A CATALYST FOR THE REACTION OF AN ALDEHYDE WITH AN OLEFIN

Charles M. Starks, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 877,465, Nov. 17, 1969, abandoned. This application May 1, 1972, Ser. No. 249,113
Int. Cl. C07d 15/04
U.S. Cl. 260—340.7 7 Claims

An olefin and an aldehyde may be reacted in the presence of an aqueous solution of a strong acid and cuprous chloride in a two-phase reaction system to produce unsaturated 1-alcohols and diols which are readily converted into compounds useful as detergents, polyesters and the like and dioxanes which may be used as solvents.

3,818,044

PREPARATION OF ZEARALANONE OR OF RACEMIC MIXTURES OF ZEARALANOL DIAMERS

Vernon V. Young, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed Jan. 17, 1972, Ser. No. 218,530
Int. Cl. C07d 9/00
U.S. Cl. 260—343.2 F 29 Claims

Substantially colorless zearalanone is produced from zearalanol, for example from the low melting diamer of zearalanol, by (1) blocking the phenolic hydroxyl groups of the zearalanol, e.g., by converting them to acetate groups, (2) oxidizing the blocked zearalanol to blocked zearalanone, and (3) removing the blocking groups from the blocked zearalanone to obtain substantially colorless, unblocked zearalanone. Alternativly, the blocked zearalanone can be directly reduced to a high purity mixture of high and low melting diamers of zearalanol.

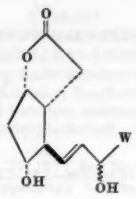
3,818,045

CERTAIN BICYCLIC LACTONE DIOLS

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Mich.

Division of Ser. No. 181,246, Sept. 16, 1971, Pat. No. 3,711,515, which is a continuation-in-part of Ser. No. 93,483, Nov. 27, 1970. This application Dec. 15, 1972, Ser. No. 315,367
Int. Cl. C07d 5/32
U.S. Cl. 260—343.3 3 Claims

Process for preparing (1) bicyclic lactone diols of the formula



wherein W is 1-pentyl, cis 1-pent-2-enyl or 1-pent-2-ynyl, and (2) prostaglandins E_3 and F_3 in their racemic and optically active configurations, their enantiomorphs, and their 15-epimers; and the products prepared therein. The diols are useful intermediates in preparing prostaglandins having pharmacological utility.

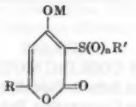
3,818,046

SULFUR-CONTAINING HYDROXY PYRONES AND ALKALI METAL SALTS THEREOF

Robert F. Harris, and Joseph E. Dunbar, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1972, Ser. No. 316,420
Int. Cl. C07d 7/16
U.S. Cl. 260—343.5 26 Claims

This invention concerns sulfur-containing hydroxy pyrones corresponding to the formula



wherein M is H or alkali metal, R is methyl, R′ is hydrogen, alkyl, phenyl, halophenyl, nitrophenyl, loweralkylphenyl, benzyl, phenethyl, naphthylmethyl, halobenzyl, loweralkylbenzyl, nitrobenzyl, propargyl, allyl, cyclohexyl loweralkyl, (loweralkylthio)-loweralkyl or adamantyl and n is 0 to 2. The compounds are prepared by reacting the mono-alkali metal salt of 4-hydroxy-6-methyl-2-pyrone with an appropriate thiosulfonate, advantageously in the presence of an organic solvent. The compounds have utility as plant growth stunters and as antimicrobial agents.

3,818,047
SUBSTITUTED PYRONES

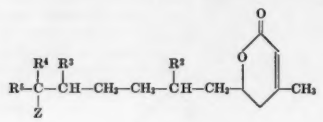
Clive A. Henrick, Palo Alto, Calif.

Continuation-in-part of Ser. No. 278,328, Aug. 7, 1972, Pat. No. 3,773,793. This application Mar. 12, 1973, Ser. No. 340,509

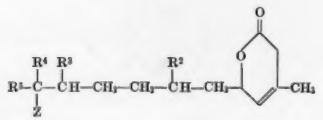
Int. Cl. C07d 7/16

U.S. Cl. 260—343.5 9 Claims

Substituted pyrones of the formula



or



wherein,

R^2, R^4 and R^5 are methyl or ethyl, R^3 is hydrogen or methyl, and Z is hydrogen, hydroxy, or alkoxy, are useful in a process for the production of aliphatic 2,4-dienoic acids, esters and thiolesters.

3,818,048
DIHYDROFURAN DERIVATIVES

Frederick Roger Foden, and Derrick Michael O'Mant, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 20, 1972, Ser. No. 236,200

Claims priority, application Great Britain, Apr. 20, 1971, 10038/71

Int. Cl. C07d 5/06

U.S. Cl. 260—343.6 5 Claims

2-(α-Alkoxycarbonylbenzylidene)-4-phenyl-3-hydroxy-5-oxo-2,52dihydrofuran derivatives, process for their preparation, and pharmaceutical compositions comprising said dihydrofuran derivatives. Compounds have anti-inflammatory activity.

3,818,049
SYNTHESIS OF CODLING MOTH ATTRACTANT

Clive A. Henrick, and John B. Siddall, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed July 26, 1971, Ser. No. 164,876

Int. Cl. C07d 7/04, 5/04; C07c 43/14, 43/20

U.S. Cl. 260—345.9 2 Claims

Sterospecific synthesis of an attractant for the codling moth by reacting sorbic aldehyde with an organo-metallic reagent to yield an 1-ether of trans-8-trans-10-dodecadiene-1.7-diol which is reduced via a 7-sulfonic acid ester to yield an ether of trans-8-trans-10-dodecadiene-1-ol and hydrolyzed to trans-8-trans-10-dodecadien-1-ol.

3,818,050
PROCESS FOR THE MANUFACTURE OF DIMETHYLMALEIC ANHYDRIDE

Marcus Baumann, and Hans Bosshard, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed June 22, 1972, Ser. No. 265,405

Claims priority, application Switzerland, July 13, 1971, 10265/71

Int. Cl. C07d 5/10

U.S. Cl. 260—346.8 R 8 Claims

A new improved process for preparing dimethylmaleic acid anhydride is disclosed which comprises reacting certain N-mono-substituted heterocyclic amidines or salts thereof with fumaric acid, maleic acid or a derivative thereof at temperatures above 70°C.

3,818,051
METHOD FOR PREPARING PROPYLENE OXIDE

Alexandr Alexeevich Balepin, ulitsa Shvernika, 14/1, korpus 1, kv. 21; Alexandr Vasilievich Bobolev, Leninsky prospekt, 30, kv. 104.; Jury Alexandrovich Buslaev, ulitsa Garibaldi, 19, korpus 4, kv. 44; Vladimir Ivanovich Chagin, Chernomorsky bulvar, 4, kv. 416; Nikolai Markovich Emanuel, Vorobievskoe shosse, 2b, kv. 44, all of Moscow, and Andrei Ivanovich Sergeev, ulitsa Chkalova, 47, kv. 49, Zhukovsky Moskovskoi oblasti, all of U.S.S.R.

Filed July 12, 1972, Ser. No. 271,187

Claims priority, application U.S.S.R., Aug. 31, 1971, 1690667

Int. Cl. C07d 1/12

U.S. Cl. 260—348.5 V 6 Claims

A method for preparing propylene oxide by oxidizing propylene with atmospheric oxygen in the presence of oxyfluoride derivatives of molybdenum or tungsten, or mixtures thereof, for example, $(Me)_2MoO_2F_4$, $(Me)_2WO_2F_4$ or $(Me)_3W_2BO_4F_7$ where Me is NH_4 K, Rb or Cs. The oxidation is carried out in organic solvents oxidizable to hydroperoxides, for example ethylbenzene, isobutane and isopentane.

3,818,052
PROCESS FOR ISOLATING 1,5-AND 1,8-DINITRO-ANTHRAQUINONE FROM ANTHRAQUINONE NITRATION MIXTURES

Walter Hohmann, and Heinz Scheiter, both of Leverkusen, Germany, assignors to Bayer Aktiengeseilschaft, Leverkusen, Germany

Filed Aug. 28, 1972, Ser. No. 284,057

Claims priority, application Germany, Aug. 28, 1971, 2143253

Int. Cl. C09b 1/00

U.S. Cl. 260—369 4 Claims

Process for the manufacture of 1,5-dinitro-anthraquinone and 1,8-dinitro-anthraquinone of a high degree of purity, characterized by nitration of anthraquinone in sulphuric acid and isolation of 1,5-dinitro-anthraquinone from the reaction mixture by adjusting to an SO_3-content of 8 – 20 percent and subsequently isolating 1,8-dinitroanthraquinone from the mother liquor by adjusting to a sulphuric acid content of 80 – 100 percent.

3,818,053
6 α, 7 α-DIHYDRO-3'H-CYCLOPROPA [6,7]PREGNA-6-DIENNE-3,15,20-TRIONE AND CONGENERS

Leland J. Chinn, 6141 Elm St., Morton Grove, Ill. 61550

Filed Aug. 6, 1973, Ser. No. 385,662

Int. Cl. C07c 169/34

U.S. Cl. 260—397.3 6 Claims

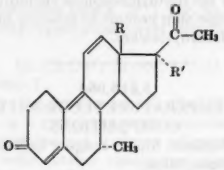
Preparation of 6α, 7α-dihydro-3'H-cyclopropa [6,7]-pregna-4,6-diene-3,15,20-trione, the Δ^1 analog, their diuretic activity, and intermediates are disclosed.

3,818,054
NOVEL 7α-METHYL-13β-ALKYL-18,19-DINOR-1Δ 4,9,11 PREGNATRIENES

Robert Bucourt, and Andre Pierdet, both of Noisy-le-Sec, France, assignors to Roussel Uclaf, Paris, France

Filed Nov. 28, 1972, Ser. No. 310,169
Claims priority, application France, Dec. 8, 1971, 71.44013
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.3 **3 Claims**

Novel 7α-methyl-13β-alkyl-18,19-dinor-$\Delta^{4,9,11}$-pregnatrienes of the formula



(I)

wherein R is alkyl of one to three carbon atoms and R′ is selected from the group consisting of hydrogen, alkyl of one to three carbon atoms and OR″ wherein R″ is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of one to 18 carbon atoms having very intense antiandrogenic activity without manifesting antihypophysical properties with LH predominance to weak degree and to novel process and intermediates.

3,818,055
17-(ARALKYLAMINOALKYL)ANDROSTAN-3B-OLS, 5 DERIVATIVES THEREOF, ETHERS AND ESTERS CORRESPONDING

Raymond E. Counsell, and Matthias C. H. Lu, both of Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Feb. 24, 1972, Ser. No. 229,206
Int. Cl. C07c *169/32*
U.S. Cl. 260—397.5 **3 Claims**

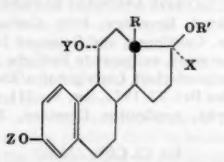
Novel compositions containing as the active ingredient certain steroids containing an oxa or aza side chain at the 17-position possess anti-hyperadreno =corticism activity as evidenced by their ability to inhibit the side-chain cleavage of cholesterol, a key step in the conversion of cholesterol to adrenal hormones.

3,818,056
11 ALPHA-ALKOXYLATED STEROIDS, PROCESS AND THERAPEUTIC METHOD

Andre Pierdet, Noisy-le-Sec, and Claude Bonne, Bry-sur-Marne, both of France, assignors to Roussel Uclaf, Paris, France

Filed June 2, 1972, Ser. No. 259,218
Claims priority, application France, June 7, 1971, 71.20453
Int. Cl. C07c *169/08*
U.S. Cl. 260—397.45 **12 Claims**

11α-alkoxylated steroids having the formula



wherein R is alkyl having one to three carbon atoms, X represents a member selected from the group consisting of hydrogen, aliphatic hydrocarbon having one to six carbon atoms, halogenated aliphatic hydrocarbon having one to six carbon atoms, and cycloalkyl having three to six carbon atoms, Y is alkyl having one to six carbon atoms, Z represents a member selected from the group consisting of hydrogen, alkyl having one to six carbon atoms and phenyl alkyl having seven to nine carbon atoms, and R′ represents a member selected from the group consisting of hydrogen and the acyl of an organic carboxylic acid having from one to 18 carbon atoms; as well as a process for preparing the compounds, therapeutic compositions and methods. The 11α-alkoxylated steroids possess anti-estrogenic, anti-gonadotrophic and exogenic anti-androgenic activity.

3,818,057
DIMETHYL-W-CARBOXYALKYLPHOSPHINES AND THEIR ALKYL ESTERS

Hans Juergen Nienburg, Ludwigshafen; Wilhelm Kniese, Limburgerhof; Rudolf Kummer, Frankenthal, and Peter Tavs, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Aug. 27, 1971, Ser. No. 175,777
Claims priority, application Germany, Sept. 8, 1970, 2044361
Int. Cl. A23j *7/00;* **C07f** *9/02*
U.S. Cl. 260—403 **7 Claims**

Dimethyl-ω-carboxyalkylphosphines and their alkyl esters which are valuable as modifying agents for catalysts used in the oxo reaction.

3,818,058
AROMATIC PERFLUOROALKYLALKYLMONOCARBOXYLIC ACID ESTERS

Horst Jaeger, Bettingen, Switzerland, assignor to Ciba-Geigy, Basel, Switzerland

Filed Feb. 3, 1971, Ser. No. 112,475
Claims priority, application Switzerland, Feb. 9, 1970, 1826/70
Int. Cl. C07c *69/62;* **D06m** *13/20*
U.S. Cl. 260—408 **8 Claims**

Aromatic perfluoroalkylalkylmonocarboxylic acid esters are provided which are derived from aromatic epoxides. These esters contain at least one perfluoroalkyl radical with four to 14 carbon atoms which is bonded over an alkylene bridge with one to 10 carbon atoms to the carboxyl group, which carboxyl group is esterified with at least one aromatic epoxide, which epoxide contains at most two epoxide groups per molecule. The hydroxyl groups produced in the esterifying process are optionally etherified or esterified with an alkanol or an alkyl carboxylic acid.

The perfluoroalkylalkylmonocarboxylic acid esters are used for treating porous or non-porous substrates, preferably to achieve oleophobic finishes on fibrous mterials, such as textiles and paper.

3,818,059
PREPARATION OF TRIDECATRIENOIC ACID DERIVATIVES

Daniel Hainaut, Villemomble; Edmond Toromanoff, Paris, and Jean-Pierre Demoute, Montreuil-Sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

Filed Nov. 10, 1971, Ser. No. 197,527
Claims priority, application France, Nov. 13, 1970, 70.40628
Int. Cl. C07c *51/00, 57/02, 69/52*
U.S. Cl. 260—410.9 R **2 Claims**

A novel process for the preparation of alkyl 3,11-dimethyl-7-ethyl-2,6,10-tridecatrienoate wherein alkyl is a hydrocarbon

of one to five carbon atoms in a semi-stereospecific manner which are useful intermediates for the preparation of juvenile hormone and to novel intermediates therefor.

3,818,060

PRODUCTION OF CARBOXYLIC ACIDS

Denis Forster, University City, and Arnold Hershman, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 26, 1971, Ser. No. 166,238
Int. Cl. C08h 17/36
U.S. Cl. 260—413 20 Claims

Production of carboxylic acids by carboxylation of ethylenically unsaturated compounds utilizing a stabilized catalyst system comprising a rhodium or iridium compound, a halide promoter and as a stabilizer an organic derivative of pentavalent phosphorus, arsenic, antimony, nitrogen or bismuth.

3,818,061

TRANSPARENT NMR SHIFT REAGENTS

Patrice Belanger, Dollard des Ormeaux, Quebec, and Michael O. Luke, Pointe Claire, Quebec, both of Canada, assignors to Merck Sharp & Dohme (I.A.), New York, N.Y.

Filed Nov. 9, 1971, Ser. No. 197,122
Int. Cl. C07f 5/00
U.S. Cl. 260—429.2 10 Claims

Rare earth metal chelates of β-diketones that are deuterated or deuterated plus halogenated and contain no more than 5 hydrogen atoms in the diketone moiety are described. The novel chelates are useful NMR shift reagents particularly because they not only solubilize the rare earth metal but additionally the β-diketone ligand is substantially to completely transparent to proton NMR analysis. The chelates are prepared by reacting the rare earth metal nitrate with the β-diketones by conventional methods.

3,818,062

UNSATURATED ORGANI-TIN MERCAPTIDES, THEIR PREPARATION AND USE

Georges Bakassian, St-Foy-Les-Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Apr. 11, 1973, Ser. No. 350,122
Claims priority, application France, Apr. 12, 1972, 72.12771; Mar. 14, 1973, 73.9097
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 9 Claims

Unsaturated organo-tin mercaptides, useful as stabilisers for halogenated vinyl resins, are obtained by reacting x mols of a mercaptocarboxylic acid HSXCOOH with y_1 mols of an alcohol HOYOH or mixture thereof with y_2 mols of alcohol HOY'OH and/or y_3 mols of alcohol ROH, where X is C_{1-4} alkylene or phenylene, Y is C_{1-10} alkylene or cycloaliphatic of five or six ring carbons, each with ethylenic and/or acetylenic bonds but not more than two of each type of bonds, Y' is C_{1-10} alkylene or cycloalkylene with five or six ring carbons, R is C_{1-8} alkyl or alkenyl, cycloalkyl or cycloalkenyl with five or six ring carbons, or phenyl (C_{1-4}) alkyl, with x, y_1, y_2 and y_3 having specified inter-relationships, to form an intermediate, and reacting the intermediate with a tin component, which is z_1 mols of diorgano tin derivative R_1R_2SnO or $R_1R_2SnCl_2$, or mixture thereof with z_2 mols of mono-organo tin derivative which is a stannoic acid monomer or polymer ($R_1SnO_{1.5}$), R_1SnCl_3, $R_1Sn(OH)Cl_2$ or $R_1SN(OH)_2Cl$ where R_1 and R_2 are C_{1-10} alkyl and x, z_1 and z_2 have specified interrelationships.

3,818,063

PREPARATION OF BIS(TRIORGANOPHOSPHINE)DI(ALKYNYL) METAL COMPLEXES

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 28, 1973, Ser. No. 345,706
Int. Cl. C07f 15/04, 15/00
U.S. Cl. 260—439 R 14 Claims

A simplified procedure for the preparation of a bis(triorganophosphine)di(alkynyl) metal complex involves the reaction of a metal alkoxide, an alkyne compound, and a dihalide metal complex. For example, sodium methoxide, phenylacetylene and bis(triethylphosphine)dichloronickel can be admixed in a single step process to produce bis(triethylphosphine)di(phenylethynyl)nickel.

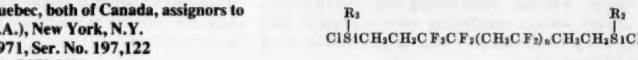
3,818,064

LOW TEMPERATURE FLUOROSILICONE COMPOSITIONS

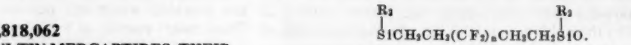
Yung K. Kim, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1973, Ser. No. 393,381
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 D 5 Claims

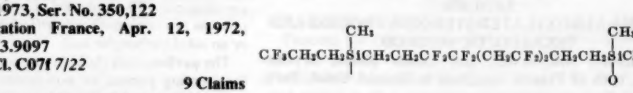
Organosilicon compounds of the formula



are prepared by reacting 1,2-dibromotetrafluoroethylene with vinylidene fluoride followed by addition to two moles of ethylene and then dehydrobromination to give the diene $CH_2{=}CHCF_2CF_2(CH_2F_2)_nCH{=}CH_2$. To the latter is added two moles of R_2HSiCl. The chlorosilane is hydrolyzed to the corresponding siloxane which can be converted to rubbery polymers combining excellent thermal stability at elevated temperatures and a lower glass transition temperature than polymers of the formula



A typical example of the new compounds is



3,818,065

PRODUCTION OF AMINOACID PRECURSORS

Ulrich Schoellkopf, Bovenden; Fritz Gerhart, Goettingen; Dieter Hoppe, Goettingen, and Reinhard Jentsch, Goettingen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Dec. 22, 1971, Ser. No. 211,112
Claims priority, application Germany, Dec. 23, 1970, 2063502
Int. Cl. C07c 121/02
U.S. Cl. 260—464 15 Claims

The invention relates to the substitution of one or two hydrogen atoms on the α-carbon atom of an α-isocyanocar-

boxylic acid derivative by means of an alkylating agent and using a metallizing agent.

3,818,066

PROCESS FOR THE PREPARATION OF ADIPONITRILE BY THE AMMOXIDATION OF CYCLOHEXANE

Clive Barnett, and John Dewing, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 770,826, Oct. 25, 1968, abandoned. This application June 8, 1971, Ser. No. 150,913

Claims priority, application Great Britain, Nov. 6, 1967, 50335/67

Int. Cl. C07c *121/02, 121/26*

U.S. Cl. 260—465.3 8 Claims

A process for the preparation of adiponitrile which comprises contacting a gaseous mixture consisting essentially of cyclohexane, ammonia and oxygen at a temperature of 300° to 700°C. with a solid catalyst consisting essentially of (1) antimony oxide, (2) molybdenum oxide, (3) a mixture of antimony oxide and the oxide of a metal selected from the group consisting of tin, titanium, and uranium wherein the ratio of antimony oxide to the other metal oxide is in the range 10:1 to 1:10 by weight or (4) molybdenum phosphate, and in the presence of a halogen-containing compound selected from the group consisting of fluorine-, chlorine-, and bromine-containing compounds, said halogen-containing compound being a halogen-containing compound which is volatile under the reaction conditions and is present in a concentration of 0.02 percent to 1 percent by volume of the reactants, or being an inorganic halide which is deposited on the catalyst surface in an amount of 0.1 percent to 5 percent by weight of the catalyst.

3,818,067

PREPARATION OF ORGANIC DINITRILES

Roland G. Downing, Orange, Tex.; Leon S. Scott, Wilmington, Del., and William C. Seidel, Orange, Tex., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed July 20, 1972, Ser. No. 273,801

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R 10 Claims

An improved process is provided for the production of organic dinitriles such as adiponitrile by reaction of hydrogen cyanide with an organic mononitrile such as 3-pentenenitrile or 4-pentenenitrile in the presence of a zerovalent nickel complex by carrying out the hydrocyanation under the conditions that the molar ratio of nitrile moieties to the nickel complex is maintained below about 10/1.

3,818,068

REMOVAL OF DEACTIVATED CATALYST SPECIES FROM A HYDROCYANATION PRODUCT FLUID

James R. Wells, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 19, 1973, Ser. No. 325,090

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R 6 Claims

A process for removing deactivated nickel catalyst species from a hydrocyanation product fluid by heating the product fluid containing the species dissolved therein at a temperature in the range of 90°–175° C. to render the species insoluble in the product fluid and removing the precipitated species from the product fluid.

3,818,069

ESTERS OF ADAMANTANE-1-ACETIC ACID

Yoshiaki Inamoto; Hirokazu Nakayama, both of Wakayama; Hidetsugu Takenaka, Arita, and Yoshitomo Kimura, Wakayama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

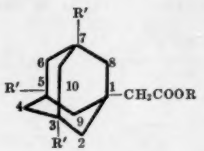
Filed July 23, 1971, Ser. No. 165,752

Claims priority, application Japan, July 31, 1970, 45-67203

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 G 2 Claims

A compound of the formula



wherein R is selected from the group of hydrocarbon radicals having 4 to 20 carbon atoms consisting of (a) linear and branch-chain alkyls and alkenyls, and (b) monocyclic and polycyclic cycloalkyls and cycloalkenyls; and R' is H or alkyl having 1 to 4 carbon atoms, is prepared by reacting adamatane-1-acetic acid, or its alkyl derivatives, with a monohydric alcohol (ROH) in the presence of esterification catalyst. The compounds are useful as oiling agents for synthetic fibers and as synthetic lubricating oil bases.

3,818,070

CARBALIPHATIC-OXY AMINOPHENYLAMIDINES

Hartmund Wollweber, Wuppertal-Elberfeld, Germany, and Winfried Flucke, Beenleigh, Queensland, Australia, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 9, 1971, Ser. No. 151,581

Claims priority, application Germany, June 13, 1970, 2029298

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C 16 Claims

N-phenylacetamidines with an acylamino or sulphonylamino group introduced into the phenyl nucleus have high anthelmintic activity and are effective even with a single dose against nematodes and cestodes in an amount between 5 and 4,500 mg. A representative compound is N-(4-carbethoxyaminophenyl)-N',N'-dimethyl-acetamidine.

3,818,071

REDUCTION OF ACIDITY IN THE PRODUCTION OF ESTERS

John Reginald Chilton, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 18, 1971, Ser. No. 116,345

Claims priority, application Great Britain, Mar. 18, 1970, 13036/70

Int. Cl. C07c *69/80*

U.S. Cl. 260—475 A 8 Claims

The residual acidity of the product of an esterification process is reduced by contacting it with steam and a finely divided solid alkali such as sodium carbonate at a temperature

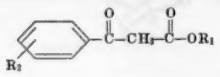
in excess of 100°C. The process is particularly applicable to plasticiser esters such as dialkyl phthalates and possesses the added advantage of cleanly removing a titanium catalyst if the latter has been used in the esterification process.

3,818,072
ALKYL SUBSTITUTED-BENZOYLACETATES ANTILIPEMIC AGENTS

Johann M. Grisar, Cincinnati, Ohio, and Willhelmus Janssens, Aarschot, Belgium, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,868
Int. Cl. C07c *69/76*
U.S. Cl. 260—476 R 6 Claims

Disclosed are novel compounds of the formula



wherein
R_1 is lower alkyl of from one to four carbon atoms and R_2 is a straight or branched chain alkyl of from eight to 14 carbon atoms which may be substituted on any position of the ring. The novel compounds are useful in the treatment of hyperlipemic states characterized by elevated blood lipid levels.

3,818,073
INSECTICIDAL AGENTS

Helmut Goebel; Gerhard Horlein, both of Frankfurt/Main, and Ludwig Emmel, Bergen-Enkheim, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Mar. 8, 1972, Ser. No. 232,968
Claims priority, application Germany, Mar. 9, 1971, 2111156
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C 10 Claims

This invention is concerned with novel derivatives of 3-hydroxy-2,2-dimethylpropanaloxime, viz. compounds of the general formula $R\text{-}O\text{-}CH_2\text{-}C(CH_3)_2\text{-}CH{=}NO\text{-}CO\text{-}NHR_1$, of which R and R_1 are defined in the specification. The novel compounds exert insecticidal properties.

3,818,074
FLUORINATED ESTERS

Arthur H. Ahlbrecht, Dellwood, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation of Ser. No. 198,428, Nov. 12, 1971, abandoned, which is a continuation of Ser. Nos. 520,087, Jan. 12, 1966, abandoned, and Ser. No. 436,281, March 1, 1965, Pat. No. 3,285,975, which is a continuation of Ser. No. 79,172, Dec. 29, 1960, abandoned. This application Apr. 20, 1973, Ser. No. 352,973
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H 6 Claims

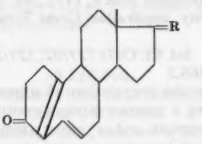
Unsaturated aliphatic acid esters of omega-perfluoroalkyl substituted alkanols having non-flammability, hydro- and oleophobic properties.

3,818,075
3—OXO—A—NOR—B—HOMO—OESTRA—5(10), 6—DIENES

Georg Anner, and Jaroslav Kalvoda, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 19, 1972, Ser. No. 273,073
Claims priority, application Switzerland, July 22, 1971, 10889/71
Int. Cl. C07c *171/06*
U.S. Cl. 260—488 B 15 Claims

The invention provides for compounds of the formula



wherein R is free or ketalised oxo, a free, esterified or etherified hydroxy group in β-position together with a hydrogen atom or a lower aliphatic hydrocarbon radical, for example, the 3,17-dioxo-A-nor-B-homo-oestra-5(10),6-diene or the 3-oxo-17β-hydroxy-17α-ethinyl-A-nor-B-homo-oestra-5(10),6-diene.

Use: as antiandrogens or as intermediates.

They may be prepared by treating a 3,10-dioxo-17-R-5,10-seco-androsta-5-ene or its tautomers with strong bases.

3,818,076
BISDIGUANIDE SALTS

Philip Neil Edwards, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 22, 1972, Ser. No. 255,670
Claims priority, application Great Britain, June 21, 1971, 28960/71; July 6, 1971, 31660/71
Int. Cl. C07c *101/22*
U.S. Cl. 260—501.11 2 Claims

Novel crystalline, non-hygroscopic salts of chlorhexidine having substantial water solubility and the ability to dissolve rapidly even in very cold water to give a solution of chlorhexidine suitable for use as an antiseptic or disinfectant.

3,818,077
L-ASPARTIC ACID DERIVATIVES

Milton Lapidus, Rosemont, and Marian M. McGettigan, Bryn Mawr, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 81,533, Oct. 16, 1970, Pat. No. 3,725,453. This application Aug. 7, 1972, Ser. No. 278,514
Int. Cl. C07c *101/08*
U.S. Cl. 260—501.11 2 Claims

Disclosed herein are derivatives of L-aspartic acid which have utility as artificial sweetener agents. Also disclosed is a method for producing such derivatives.

3,818,078
PHOTOGRAPHIC SILVER HALIDE DEVELOPING AGENTS

Charleton C. Bard, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 801,138, Feb. 20, 1969, Pat. No. 3,592,652, which is a continuation-in-part of Ser. No. 639,274, May 18, 1967, abandoned. This application July 6, 1971, Ser. No. 160,179
U.S. Cl. 260—509 6 Claims

Monocyclic and bicyclic phenols containing at least one sulfonamido group, especially an aromatic sulfonamido group,

and a nitrogen containing radical (which may be a sulfonamido group), are described. They are photographic silver halide developing agents for black-and-white development, but are especially useful as competing or balancing developing agents in photographic color developers to control amount of dye produced by the color developer, especially those containing the color-former or coupler.

3,818,079

METHOD OF PREVENTING THE POLYMERIZATION OF UNSATURATED CARBOXYLIC ACID

Ryozi Sato, Takaoka; Yasuyoshi Chino, Tokyo, and Tatus Endo, Yokohama, all of Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed July 2, 1971, Ser. No. 159,553

Claims priority, application Japan, July 7, 1970, 45-58764

Int. Cl. C07c *51/50, 57/04*

U.S. Cl. 260—526 N **12 Claims**

A method of preventing polymerization of an unsaturated carboxylic acid selected from the group consisting of acrylic acid and methacrylic acid, which comprises adding to the acid, as the polymerization inhibitor, the combination of (i) at least one phosphorus compound selected from the group consisting of phosphoric acid compounds and phosphorus oxide compounds, and (ii) at least one hydroxyl group containing compound selected from the group consisting of cresols, 4,4-thiobis-6-tert.-butyl-3-methylphenol, dihydroxybenzene derivatives and pyrogallol, in the amount sufficient to inhibit polymerization of the monomer.

3,818,080

3-HYDROXY-3-SUBSTITUTED GLUTARIC ACID DERIVATIVES

John Stanislaus Baran, Winnetka, and Donna Langford, Wilmette, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed July 20, 1972, Ser. No. 273,417

Int. Cl. C07c *59/12*

U.S. Cl. 260—535 P **8 Claims**

3-Hydroxy-3-substituted glutaric acid derivatives are prepared in two steps. An ester of a carboxylic acid is reacted with a 2-alkenyl magnesium bromide and the resulting 4-substituted-4-hydroxy-1,6-heptadiene is ozonized, then oxidized to form the 3-hydroxy-3-substituted glutaric acid. These compounds have anti-ulcerogenic activity.

3,818,081

SEPARATION OF DICARBOXYLIC ACIDS

Edward Georg Adamek, Toronto, Ontario, Canada, assignor to DuPont of Canada Limited, Montreal, Quebec, Canada

Filed Oct. 7, 1971, Ser. No. 187,511

Claims priority, application Canada, Oct. 15, 1970, 95668

Int. Cl. C07c *51/42*

U.S. Cl. 260—537 P **9 Claims**

A process for separating adipic acid from a mixture of adipic, glutaric and succinic acids which comprises treating the mixture of acids under substantially anhydrous conditions with less than the stoichiometric amount of ammonia for complete ammoniation, separating the glutaric and succinic acids in the form of their corresponding imides and recovering adipic acid.

3,818,082

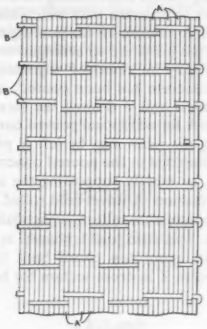
PROCESS FOR THE PRODUCTION OF CARBONACEOUS TAPES

Kenneth S. Burns, Basking Ridge; George R. Ferment, Dover, both of N.J., and Roger C. Waugh, Rock Mart, Ga., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 3, 1971, Ser. No. 112,189

Int. Cl. B29c *25/00*

U.S. Cl. 264—29 **13 Claims**



An improved process is provided for the simultaneous conversion of a plurality of adjoining parallel ends of an organic polymeric fibrous material to a carbonaceous fibrous material. The parallel warp ends are provided and maintained during at least a portion of the conversion process an an integral tape possessing a high degree of structural integrity by the presence of a weft pick interlaced therewith in a sateen weave construction which floats a substantial number of the parallel warp ends as described. When the resulting carbonaceous tape is incorporated in a matrix material to form a composite article, the presence of the weft pick therein produces no substantial diminution in the composite properties.

3,818,083

BUILDING METHOD

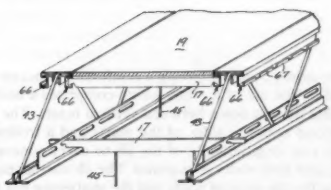
Ernest O. Butts, and John S. Hall, both of Ottawa, Ontario, Canada, assignors to Hambro Structural Systems Limited, Ottawa, Ontario, Canada

Division of Ser. No. 220,627, Jan. 25, 1972, which is a continuation-in-part of Ser. Nos. 872,017, Oct. 29, 1969, abandoned, and Ser. No. 145,758, May 21, 1971. This application July 24, 1972, Ser. No. 274,514

Claims priority, application Canada, Nov. 4, 1968, 034293; May 28, 1970, 084014; Mar. 16, 1971, 107895

Int. Cl. EO4g *11/50, 21/00*

U.S. Cl. 264—31 **9 Claims**



A steel joist formwork and a composite steel and concrete floor structure provided with a top chord, a bottom chord and a web joining the top and bottom chords with the top chord

being serpentine shaped like an S or Z and including top and bottom, generally horizontal portions and an intermediate portion integrally connecting opposite edges of the top and bottom portions with the top and intermediate portions substantially being adapted to be embedded in the concrete floor to cause the floor and steel joists to act structurally as a composite beam. Either the web or a leg depends vertically from the free end of the bottom portion of the top chord, and the web joining the top and bottom chords is substantially solid or is, an open web formed of a zig-zag bar member. There is also disclosed a building system and erecting method utilizing steel joists spaced apart by spanner bars which also support rigid panels which act as formwork for the pouring of concrete. The spanner bars and the joists are so arranged to cooperate that the spanner bars may be removed together with the rigid panels after the concrete has been poured, and the spanner bars, the rigid panels and if desired the steel joists may be reused for formwork for additional poured concrete construction. Alternatively the joists may be left in place either with the top chords embedded in the poured concrete to provide a composite action, or merely supporting the concrete slab in the conventional fashion. A novel cold rolled sheet steel joist may be advantageously used to form a particularly economical composite system. This steel joist is shaped in an I-beam configuration with an upper top chord bent to have the appearance of the letter Z in cross-section for bonding with the concrete floor.

3,818,084

METHOD AND APPARATUS FOR THE CONSTRUCTION OF MULTI-STOREY BUILDINGS

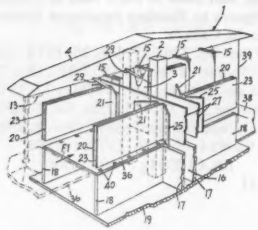
Mario Tamburini, 5 Via Grimaldi, Bologna, Italy (I40122)

Filed Mar. 20, 1972, Ser. No. 235,912

Claims priority, application Italy, Apr. 3, 1971, 12620/71; Mar. 10, 1972, 12528/72

Int. Cl. EO4g *21/14, 11/00*

U.S. Cl. 264—33 **9 Claims**



A multi-storey building having a reinforced concrete frame is erected by the use of a crane which comprises a horizontal jib movable up and down between vertical masts. The jib extends beyond opposite sides of the masts and a trolley is arranged to run longitudinally of the jib to carry concrete and prefabricated floor slabs as required. The jib also supports the shuttering for the vertical walls and the shuttering has the full height of the walls for a storey. Elevator means are arranged to raise the jib, with the shuttering, as each storey is erected and the crane can also be elevated bodily between the formation of storeys and arranged to be supported by an already erected storey.

3,818,085

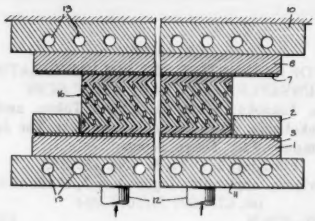
PRESS METHOD OF MAKING EXPANDED THERMOPLASTIC SHEET

John E. Marsland, Jr., and Raymond J. Malinowski, both of St. Joseph, Ind., assignors to Uniroyal Inc., New York, N.Y.

Filed Sept. 21, 1971, Ser. No. 182,442

Int. Cl. B29c *3/00;* **B29d** *27/00*

U.S. Cl. 264—45 **7 Claims**



The invention is a novel method of making an expanded thermoplastic sheet, typified by rigid sheets having an expanded ABS resinous core and unexpanded thermoplastic facing sheets integrally bonded thereto, such as are shown in U. S. Pat. No. 3,206,354.

The method involves clamping sheet thermoplastic material, at least a portion of which is made from expandable thermoplastic material containing a chemical flowing agent, between two press platens extending over a frame mold member thinner than the plastic material within which the thermoplastic material is positioned, heating the thermoplastic material while applying high clamping pressure thereto by means of the press platens to accomplish fusion of the thermoplastic, expulsion of air, consolidation of the thermoplastic material into a fusion-bonded integral sheet and decomposition of the blowing agent, then relieving the clamping pressure in a controlled manner and continuing to apply heat so as to expand the sheet while maintaining low but positive contacting pressure between the sheet and the opening platens until the final desired thickness is achieved, and then, while holding the platens at this thickness opening, cooling the expanded sheet.

3,818,086

PRODUCTION OF EXPANDED ETHYLENE POLYMERS

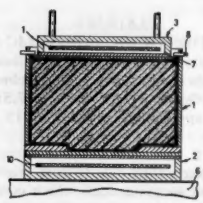
Fritz Stastny, Ludwigshafen; Rudolf Gaeth, Limburgerhof, and Boris Ikert, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 17, 1970, Ser. No. 29,515

Claims priority, application Germany, Apr. 18, 1969, 1919748

Int. Cl. B29c *3/00;* **B29d** *27/00*

U.S. Cl. 264—55 **5 Claims**



Production of flexible expanded moldings from olefin polymers by heating a mixture comprising an olefin polymer, a

peroxide and a solid expanding agent in a mold, which is gastight when closed and is filled with a volume of said mixture equal to from 95% to 100% of its capacity, to a temperature above the softening point of the olefin polymer and above the decomposition temperature of the peroxide and of the expanding agent, starting to release the pressure in the mold to atmospheric pressure, immediately increasing the volume of the mold to from 3 to 35 times the volume of the expansible melt within from 0.1 to 20 seconds and then cooling the expanded molding. The moldings are used as thermal and sound insulating materials and as upholstery padding.

3,818,087

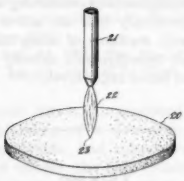
PROCESS OF MAKING THERMAL SHACK-RESISTANT CERAMIC WARE

Clarence Michael Smyser, 7491 Tulpehocken St., Philadelphia, Pa. 19138

Continuation-in-part of Ser. No. 726,296, May 3, 1968, abandoned. This application June 26, 1970, Ser. No. 50,109

Int. Cl. F27b *9/04*

U.S. Cl. 264—65 **5 Claims**



A ceramic stoneware or whiteware (porcelain) made of a thermal shock-resistant mix of certain proportions of coarse and fine particles of a lithium mineral petalite or spodumene, with a clay; ball clay and fireclay in the case of stoneware, and kaolin and permissibly ball clay in the case of whiteware. Shapes are fired at 1,236° to 1,285° C. inclusive (cones 8–10).

3,818,088

SELF-REGULATING ACID CIRCULATION IN THE CONTACT PROCESS

Joachim Sasse, Junkersdorf, Germany, assignor to Chemiebau, Dr. A. Zieren GmbH & Co., KG, Koln, Germany

Filed Apr. 19, 1971, Ser. No. 135,016

Claims priority, application Germany, Apr. 18, 1970, 2018761

Int. Cl. C01b *17/80*

U.S. Cl. 423—522 **13 Claims**

In the double absorption contact process for the production of sulfuric acid, the sump of the air drying tower and/or sulfur dioxide drying tower is connected in cascade series flow with the sump of the intermediate absorber tower which in turn is connected with the sump of the final absorber tower. The connection between the towers is effected by overflow pipes having at least one leg sealed by liquid thereby preventing any mixing of the gases in the various towers. The flow of the acid between the towers is substantially self-regulating and requires no pumps.

3,818,089

FAT ABSORPTION INDICATOR FOR THE DIGESTIVE TRACT

Henry S. Bayley, Guelph; Ontario, and Walter E. Carlson, Fort Saskatchewan, Alberta, both of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Jan. 18, 1971, Ser. No. 107,562

Int. Cl. G01n *5/02, 31/06, 33/02*

U.S. Cl. 424—9 **9 Claims**

As a fat absorption indicator for determining fat absorption during its passage through the digestive tract, a fully etherified, fat soluble, polyalkyl polyol, particularly trialkyl glyceryl ethers, and preferably tridodecylglyceryl ether, is administered in a dietary feed composition containing a fat.

ERRATUM

For Class 424—258 see:
Patent No. 3,818,010

3,818,090

NOVEL QUINOLINES IN THE TREATMENT OF PAIN AND INFLAMMATION

Andre Allais, Les Lilas, and Jean Meier, Caeuilly-Champigny, both of France, assignors to Roussel Uclaf, Paris, France

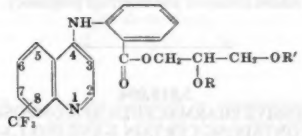
Division of Ser. No. 786,398, Dec. 23, 1968, Pat. No. 3,644,368. This application July 7, 1971, Ser. No. 160,527

Claims priority, application France, Dec. 29, 1967, 67.134404; Mar. 29, 1968, 68.146326; Aug. 23, 1968, 68.163980

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **3 Claims**

Novel 4-[ortho-(2′,3′-dihydroxypropyloxycarbonyl)-phenyl]-amino-quinolines of the formula



I

wherein the CF_3 radical is in the seven or eight-position, R and R′ are hydrogen and taken together form a ketonide of the formula

P and Q being selected from the group consisting of alkyl aralkyl and aryl and the non-toxic, pharmaceutically acceptable addition salts when R and R′ are hydrogen, which possess notable anti-inflammatory activity and intense analgesic activity.

3,818,091

PHARMACEUTICAL COMPOSITIONS CONTAINING ALPHA-PHENY-ALPHA-PYRIDYL-ACETONITRILE AND METHOD OF USE

Wilhelm Konz, Ingelheim am Rhine, and Franz Waldeck, Mainz-Hechtsheim, both of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

Filed Feb. 7, 1973, Ser. No. 330,183

Claims priority, application Germany, Feb. 12, 1972, 2206785

Int. Cl. A61k 27/00

U.S. Cl. 424—263 1 Claim

Pharmaceutical compositions containing as an active ingredient α-phenyl-α-pyridyl-acetonitrile, and a method of inhibiting stomach juice secretion and combatting stomach ulcers therewith.

3,818,092

PYRIDYL KETIPATE LACTONES AND DERIVATIVES IN TREATING ARTHRITIS

Blaine M. Sutton, Hatboro, Pa., assignor to Smithkline Corporation, Philadelphia, Pa.

Division of Ser. No. 160,190, July 6, 1971, Pat. No. 3,714,173. This application Sept. 8, 1972, Ser. No. 287,381

Int. Cl. A61k 27/00

U.S. Cl. 424—266 2 Claims

Pyridyl ketipate lactones and derivatives having anti-arthritic activity prepared by alcoholysis of an appropriate pyridyl substituted dilactone.

3,818,093

METHOD OF INDUCING INFERTILITY AND PREVENTING LITTERING IN THE FEMALE

Do Won Hahn, Flemington, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed May 10, 1971, Ser. No. 142,012

Int. Cl. A61k 27/00

U.S. Cl. 424—270 4 Claims

3,5-bis(substituted amino)-1,2,4-dithiazolium salts and their dithiobiuret intermediates are administered to female animals to inhibit ovulation and interrupt pregnancy.

3,818,094

HYPOTENSIVE PHARMACEUTICAL COMPOSITIONS CONTAINING CERTAIN 2-ANILINO-1,3-DIAZACYCLOPENTENES-(2)

Helmut Stahle; Herbert Koppe; Karl Zeile, all of Ingelheim/Rhine; Wolfgang Hoefke, Budenheim/Rhein, and Hans-Wolfgang Samtleben, Ingelheim/Rhine, all of Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhine, Germany

Division of Ser. No. 854,034, Aug. 28, 1969, Pat. No. 3,622,579, which is a continuation of Ser. No. 801,863, Feb. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 583,424, Sept. 30, 1966, abandoned. This application July 20, 1971, Ser. No. 164,480

Claims priority, application Germany, Oct. 1, 1965, 83964

Int. Cl. A61k 27/00

U.S. Cl. 424—273 2 Claims

Hypotensive pharmaceutical compositions containing 2-(2'-methyl-3'-bromo-anilino)-1,3-diazacyclopentene-(2),2-(2'-chloro-5'-methoxy-anilino)-1,3-dizacyclopentene-(2), or a non-toxic, pharmacologically acceptable acid addition salt of either of these compounds as an active ingredient; and a method of reducing the blood pressure without appreciably inhibiting the gastric juice secretion rate in warm-blooded animals therewith.

3,818,095

COMPOSITIONS OF 1,2-DILOWER ALKYL-3(AND/OR4)-ARYL-3-PYRAZOLINES AND SALTS THEREOF AND METHOD OF LOWERING BLOOD SUGAR LEVELS WITH SAME

Robert Jacquier, Montpellier, France, assignor to Schering Corporation, Bloomfield, N.J.

Filed Apr. 12, 1972, Ser. No. 243,427

Int. Cl. A61k 27/00

U.S. Cl. 424—273 26 Claims

Pharmaceutical compositions containing as active component a 1,2-dilower alkyl-3(and/or 4)-aryl-3-pyrazoline, or an acid addition salt or a quaternary salt thereof are described, along with methods of using same. These active components exhibit hypoglycemic activity as evidenced by their ability to lower blood sugar levels.

3,818,096

COMPOSITIONS OF 1,2-DILOWER ALKYL ARYLPYRAZOLIUM QUATERNARY SALTS AND METHOD OF LOWERING BLOOD SUGAR LEVELS WITH SAME

Margaret Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Filed Apr. 12, 1972, Ser. No. 243,429

Int. Cl. A61k 27/00

U.S. Cl. 424—273 28 Claims

Pharmaceutical compositions containing a 1,2-dilower alkyl arylpyrazolium quaternary salt as active component are described, along with methods of using same. These active components exhibit hypoglycemic activity as evidenced by their ability to lower blood sugar levels.

3,818,097

METHOD OF INHIBITING HISTAMINE ACTIVITY WITH ISOTHIOUREAS

James Whyte Black, Hemel Hempstead; Graham John Durant, Welwyn Garden City; John Colin Emmett, Codicote, and Charon Robin Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Continuation-in-part of Ser. No. 80,818, Oct. 14, 1970, Pat. No. 3,759,944. This application Mar. 22, 1973, Ser. No. 343,741

Claims priority, application Great Britain, Oct. 29, 1969, 52890/69

Int. Cl. A61k 27/00

U.S. Cl. 424—273 9 Claims

A method of inhibiting histamine activity by administering S-(heterocyclic-alkyl) isothioureas.

3,818,098

METHOD FOR CONTROLLING RICE BLAST WITH N-(3-CHLORO-P-TOLYL) MALEIMIDES

Helen K. Tobol, Concord, and Ronald J. Sbragia, Clayton, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 17, 1972, Ser. No. 307,606

Int. Cl. A01m 9/22

U.S. Cl. 424—274 1 Claim

A method for controlling rice blast on a rice plant comprising applying to the plant to be protected a rice blast controlling amount of N-(3-chloro-p-tolyl-maleimide.

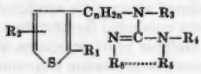
3,818,099

3-GUANIDINOALKYL-THIOPHENE-COMPOSITIONS

Lincoln Harvey Werner, Summit, and Neville Finch, West Orange, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 109,957, Jan. 26, 1971, Pat. No. 3,746,724, which is a continuation-in-part of Ser. No. 28,029, April 13, 1970, abandoned. This application Sept. 18, 1972, Ser. No. 290,036
Int. Cl. A61k 27/00
U.S. Cl. 424—275 4 Claims

3-Guanidinoalkyl-thiophenes, e.g. those of the formula



$R_{1,2}$=H, alkyl or halogen
$R_{3,4}$=H or alkyl
n=1–4
$R_{5,6}$=H, alkyl or alkylene
and salts thereof are antihypertensives.

3,818,100

CONTROL OF VAMPIRE BATS

Samuel B. Linhart, Golden, Colo., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 24, 1972, Ser. No. 247,179
Int. Cl. A01n 9/24, 9/28
U.S. Cl. 424—281 1 Claim

Control of vampire bats is accomplished by capture of individual bats, application of a slow-acting toxicant to the bodies of the individuals, and subsequent release of the treated bats. After release, the bats return to their roosting sites where the toxicant is spread to other vampires, resulting in death of a large percentage of the bats.

3,818,101

METHODS FOR IMPROVING THE FEED INTAKE OF MEAT PRODUCING ANIMALS

Clifton A. Baile, Glen Mills; Lavern F. Krabill, West Chester, and C. Wayne Simpson, Malvern, all of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Filed Aug. 28, 1972, Ser. No. 284,374
Int. Cl. A61k 27/00
U.S. Cl. 424—300 6 Claims

New methods and compositions for inducing polyphagia in immature, meat producing animals is described, utilizing β-adrenergic agonists or stimulants as active ingredients. The active ingredients are generally hydroxyphenethanolamines known to have sympathomimietic activity. Particularly useful are implant pellets due to the low doses of active ingredients at which polyphagic activity is found.

3,818,102

INSECTICIDAL SULFONATES

Richard D. Partos, Brentwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 9, 1970, Ser. No. 17,902
Int. Cl. A01n 9/14
U.S. Cl. 424—303 9 Claims

Substituted aryl alkane sulfonates having insecticidal properties.

3,818,103

METHOD FOR COMBATING HERPES SIMPLEX VIRUS

Anne Mary Von Esch, North Chicago, and Adolph Oscar Geiszler, Mundelein, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 10, 1972, Ser. No. 296,354
Int. Cl. A61k 27/00
U.S. Cl. 424—317 2 Claims

A method of treating herpes simplex infections in animals by administering sulfonoacetic acid or its salts.

Although herpes simplex is a very common though minor disease, the only basic treatment presently available is the application of idoxuridine.

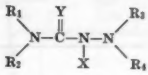
3,818,104

USE OF DITHIOBIURETS AS FUNGICIDES

James Zielinski, Kenilworth, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

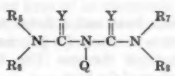
Continuation-in-part of Ser. Nos. 732,858, May 20, 1968, and Ser. No. 821,975, May 5, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,365
Int. Cl. A01n 9/12
U.S. Cl. 424—322 9 Claims

Semicarbazides, especially the tetraalkylated thiosemicarbazides, and biuret derivatives, especially the mono- and dithiobiuret derivatives, are effective fungicides, bactericides, herbicides, and also have demonstrated effective growth regulating activity. Exemplary of preferred semicarbazides are those of the general formula:



where R_1–R_4 can be unsubstituted or substituted C_1–C_{14} alkyl and X can be hydrogen, or unsubstituted or substituted C_1–C_{14} alkyl and Y can be O or S.

Exemplary of preferred biuret derivatives are those of the general formula:



wherein R_5–R_{11} can be hydrogen or unsubstituted or substituted C_1–C_{14} alkyl and Y can be O or S and combinations thereof; and Q can be R_9 or

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3,818,105

COMPOSITION AND PROCESS FOR LUBRICATING THE SKIN

Myron Coopersmith, Livingston; Wayne N. Kochenderfer, Red Bank, and Lanny G. Felty, Jackson Twp., all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Aug. 23, 1971, Ser. No. 174,231
Int. Cl. A61k 7/00; A61l 23/00
U.S. Cl. 424—358 2 Claims

C_{12}–C_{14} isoparaffinic hydrocarbon fractions are effective skin lubricants and cosmetic formulation constituents. The

paraffinic oils possess a unique combination of properties, namely, low viscosity, moderate volatility, plus the ability to disperse dyes and/or pigments. Typically, the isoparaffinic hydrocarbon fraction makes up less than 50 weight % of the total cosmetic formulation and are normally admixed with water, monoalkanols, alkyl and aryl esters, humectant compositions, surfactants, lanolin, white oils, pigments, dyes, clays, perfumes and mixtures thereof.

3,818,106

TENDERIZATION OF MEAT WITH PROTEOLYTIC ENZYMES

Chunghee Kim Kang, Hinsdale; William D. Warner, Elmhurst, and Eldon E. Rice, Palos Park, all of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Oct. 2, 1972, Ser. No. 294,205

Int. Cl. A22c *18/00*

U.S. Cl. 426—2 **20 Claims**

Sulfhydryl proteases such as papain, bromelain or ficin are treated with certain disulfide inactivators to reversibly inacitivate the active enzyme fraction while preserving essentially 100% of the total enzymatic activity. The inactivated enzyme is then injected ante-mortem into an animal's vascular system wherein the enzyme is reactivated at a controlled rate by naturally occurring reducing agents present in the animal's blood.

3,818,107

CHEWING GUM WITH SUSTAINED FLAVOR RELEASE COMPOSITIONS

Seymour Yolles, Newark, Del., assignor to David E. Brook, Acton, Mass., a part interest

Filed Sept. 28, 1972, Ser. No. 293,168

Int. Cl. A23g *3/00, 3/30*

U.S. Cl. 426—3 **13 Claims**

Chewing gum with base and a flavor release composition comprising a reaction product of a polymer backbone having pendant flavor moieties thereon. The flavor moieties are released upon chewing of the gum.

3,818,108

ZERO FERMENTATION BREAD PROCESS

Bradley W. Morrison, Chateauguay, Quebec, Canada, assignor to The Ogilvie Flour Mills Company Limited, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 171,402, Aug. 12, 1971, abandoned which is a continuation of Ser. No. 767,921, Oct. 6, 1968, abandoned. This application Oct. 19, 1972, Ser. No. 299,124

Int. Cl. A21d *2/22, 2/04*

U.S. Cl. 426—25 **3 Claims**

An activated flour containing defined amounts of ascorbic acid and an edible oxidising agent when used in the manufacture of yeast-raised baked goods permits the elimination of the distinct bulk fermentation period and thereby significantly reducing the overall processing time, typically to around two hours or less. The flour is used in a process of improving the straight-dough method of preparing yeast-raised baked goods in which the activated flour is mixed with conventional dough ingredients, the dough is relaxed and immediately thereafter divided, moulded, panned, proofed and baked.

3,818,109

CONVERSION OF WHEY SOLIDS TO AN EDIBLE YEAST CELL MASS

Robert M. Bechtle, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Continuation-in-part of Ser. No. 126,308, March 19, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,126

Int. Cl. A23c *21/00*; C12c *11/00*; A23j *1/18*

U.S. Cl. 426—41 **16 Claims**

A concentrated substrate of whey solids is inoculated with a mixed dairy starter culture capable of converting lactose to lactic acid and a mixed yeast culture capable of utilizing lactose and/or lactic acid. Before inoculation the substrate is sterilized without denaturation of the whey protein. With nutritional additives as required to optimize bacteria and yeast growth, the inoculated substrate is subjected to a protracted fermentation by the combined fermentative actions of multiple bacteria and multiple yeast organisms while aerating the substrate. The aerated fermentation is continued past an intermediate stage, as indicated by the pH minimum, where most of the lactose has been utilized and the lactic acid content of the substrate is inhibitory to the dairy starter culture bacteris, through an essential final stage where the protein and carbohydrate content of the substrate is converted substantially entirely to yeast cells, thereby producing an edible yeast cell mass product substantially free from whey protein, lactose, lactic acid, and bacteria cells.

3,818,110

METHOD OF PRODUCING KOLA NUT EXTRACT

Jean V. Torcol, Paris, and Denis J. Dessolin, Nogent-sur-Marne, both of France, assignors to Institut pour La Technologie et l'Industrialisation des Produits Agricoles Tropicaux, Abidjan, France

Filed June 9, 1971, Ser. No. 151,570

Claims priority, application France, June 11, 1970, 70.21440

Int. Cl. A23l *1/36*

U.S. Cl. 426—44 **4 Claims**

This method of producing a complete stabilized extract of fresh kola nuts having a high caffeine content associated with useful substances such as alcaloids and phenol compounds, consists in washing with pure water at about 75°C during a few minutes grated kiola nuts immediately after the fragmentation thereof to destroy the oxidases, then cooling the macerated product to at least 50°C and bringing the pH value to about 5, filtering, washing and then, at about 25°C, sowing the liquid with yeasts to effect the alcohol fermentation, distilling and concentrating the filtrate in vacuo.

3,818,111

FINING AND INCREASING THE CHILL HAZE STABILITY OF FERMENTED ALCOHOLIC BEVERAGES

Lonnie Daniel Hoover, Hockley, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,482

Int. Cl. C12h *1/02*

U.S. Cl. 426—330 **17 Claims**

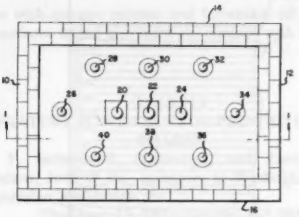
A novel process of fining and removing chill haze precursor substances from vegetable beverages, particularly beer, in order to improve the clarity and chill haze stability of such beverages which is characterized by the separate addition to the beverage of a nitrogeneous carbonyl containing organic material which is water soluble or colloidially dispersible in water selected from the group consisting of gelatin, N-vinylpyrrolidone and polymers of N-vinylpyrrolidone and a polysilicic acid coagulant from a source consisting of polysilicic acid hydrosols, stabilized polysilicic acid hydrosols, and polysilicic acid hydrogels in which the polysilicic acid has not polymerized to such an extent that syneresis has occurred, followed by aging of the beverage and removal of coagulated substances from the beverage.

ELECTRICAL

3,818,112
ELECTRICAL FURNACE FOR MELTING GLASS

Thomas A. Clishem, Valley Station; Francis R. Duerr, Devondale, both of Ky., and Carl T. Snook, Utica, Ind., assignors to Corhart Refractories Company, Louisville, Ky.

Filed Apr. 30, 1973, Ser. No. 355,877
Int. Cl. C03b 5/02
U.S. Cl. 13—6 **5 Claims**

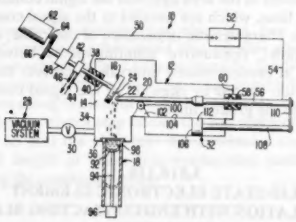


An electrical furnace particularly suitable for melting thermoplastic material used in producing glass fibers includes a tank having side walls constructed of a refractory material having an electrical conductivity greater than the material being melted at furnace melting temperature. In order to minimize electrical conduction through the side walls, first and second sets of electrodes are arranged with one set centrally disposed in the tank and the other set surrounding the first. Electric power is applied between the first and second electrodes to generate a potential field with substantially continuous equi-potential lines between the second electrodes so as to shield the first electrodes from the side walls. An electrical control circuit limits the current flow between any two electrodes to prevent a runaway condition which might otherwise be caused by the steep negative temperature-resistivity characteristics of the glass. The control circuit includes a circuit which minimizes the DC component from current flow between the electrodes.

3,818,113
ARC FURNACE HAVING CONSUMABLE AND NON-CONSUMABLE ELECTRODES AND METHOD

Max P. Schlienger, 19 Rollingwood Dr., San Rafael, Calif. 94901

Filed Sept. 4, 1973, Ser. No. 393,871
Int. Cl. H05b 7/06
U.S. Cl. 13—9 **18 Claims**

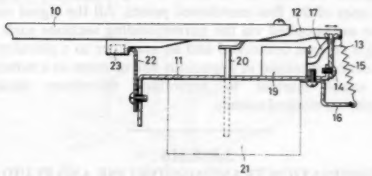


An arc furnace having a first, non-consumable electrode in the form of a rotatable, cooled wheel within an evacuated housing and a second consumable electrode shiftably mounted within the housing for movement toward the first electrode as the latter rotates and after an arc has been established between the two electrodes. A crucible carried by the housing is positioned below the arc to receive molten material from the consumable electrode as the latter melts due to the heat of the arc. In one form of the invention, the mounting shaft for the first electrode extends upwardly and away from the second electrode. In another form of the invention, the shaft extends downwardly and away from the consumable electrode. In a third embodiment, means are provided to direct a gas under pressure to the arc to atomize the molten material before it is collected in the crucible therebelow.

3,818,114
DEVICE FOR CAUSING A TREMOLO OR LIKE EFFECT IN AN ELECTRONIC KEYBOARD MUSICAL INSTRUMENT

Shimaji Okamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Apr. 12, 1973, Ser. No. 350,628
Claims priority, application Japan, Apr. 13, 1972, 47-043773
Int. Cl. G10h 1/04
U.S. Cl. 84—1.25 **5 Claims**



Each of the playing keys of an electronic keyboard musical instrument is supported so as to be capable of moving back and forth besides turning up and down through a predetermined angle in the usual manner. Typically, the back-and-forth motion of each key is detected photoelectrically, by means comprising a light source, a light-sensitive variable resistor, and an apertured shutter movable in step with the back-and-forth motion of the key to regulate the intensity of the light incident upon the light-sensitive variable resistor from the light source. The output from the photoelectric means is utilized, for instance, to regulate the level of the signal delivered from a tone coloring circuit to an amplifier circuit of the electronic musical instrument so that a tremolo effect can be added to the sound emitted from a loudspeaker connected to the amplifier circuit.

3,818,115
MULTI-CHANNEL STEREOPHONIC SOUND REPRODUCING SYSTEM FOR ELECTRONIC MUSICAL INSTRUMENTS

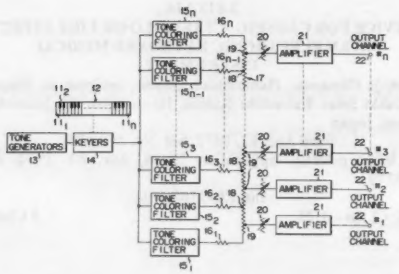
Katsuhiko Hirano, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamakita-shi, Japan

Filed July 6, 1972, Ser. No. 269,379
Claims priority, application Japan, July 8, 1971, 46-59822; July 13, 1971, 46-60960
Int. Cl. G10h 1/00
U.S. Cl. 84—1.24 **14 Claims**

The multi-channel stereophonic sound reproducing system includes tone generators for generating tone signals each hav-

ing a predetermined pitch and keyers each arranged to derive from the tone generators a tone signal having a pitch corresponding to the depressed one of a plurality of keys juxtaposed in the order of musical notes. Each of the tone signals derived through the keyers is applied to the preselected one of a plurality of tone coloring filters having frequency characteristics different from each other.

Output signals from the tone coloring filters are supplied via individual resistors to a plurality of points in the longitudinal



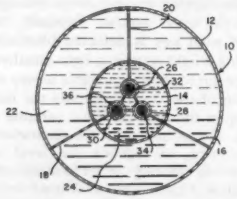
direction of an elongated resistor body to form a composite signal. The composite signal is separated into a plurality of components at other points each arranged between the adjacent ones of the first-mentioned points. All the signal components are supplied via the corresponding sections each including a volume controlled and an amplifier to a plurality of loudspeakers disposed in a spacious hall or room at a substantially equal interval to reproduce therefrom desired stereophonic musical sounds.

3,818,116

COMBINATION TRANSMISSION LINE AND FLUID CONDUIT

Harry A. Kuljian, 1845 Walnut St., Philadelphia, Pa. 19103

Filed Jan. 10, 1973, Ser. No. 322,486
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C **5 Claims**



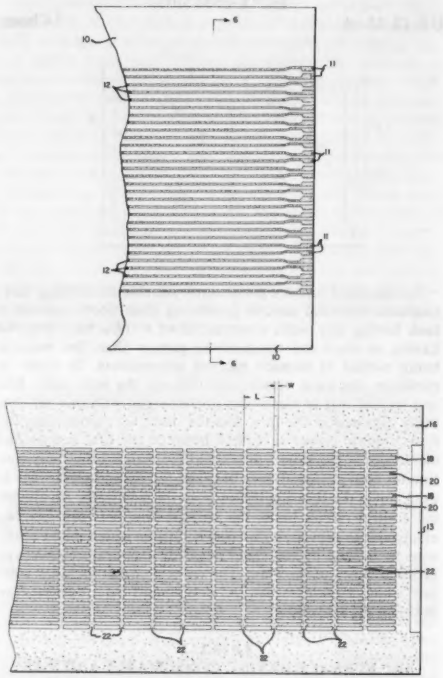
A combination electrical transmission line and fluid conduit system including an inner conduit containing electrical transmission line conductors surrounded by an insulating and heat absorption medium such as transformer oil. The heat absorption medium absorbs the heat losses produced by the flow of current through the conductors. An outer fluid carrying conduit completely surrounds and is concentric with the inner conduit. Sufficient spacers are employed to maintain the position relationship between the respective inner and outer conduits. Fluid under pressure is pumped through the annular space defined between the inner and outer conduits and this fluid is heated uniformly by the heat absorption medium to permit pumping in cold envionments without the need for external heating systems. If it becomes necessary to introduce additional heating to keep the fluid at a desired temperature, additional heating can be obtained by installing transformers.

3,818,117

LOW ATTENUATION FLAT FLEXIBLE CABLE

Emerson Marshall Reyner, II, Box 514, R.D. No. 1, Palmyra, Pa. 17078, and Jerry Hench Bogar, 1090 Cardinal Dr., Harrisburg, Pa. 17111

Filed Apr. 23, 1973, Ser. No. 353,257
Int. Cl. H01b *7/08*
U.S. Cl. 174—36 **11 Claims**



A flat shielded cable comprising a plurality of parallel spaced-apart signal conductors in a first plane and a shield member in the form of a conductive ground plane facing the signal conductors and being positioned in a second plane, the shield member having preselected amounts of conductive material removed in the area opposite the signal conductors to form ground lines, which are parallel to the signal conductors to control the characteristic impedance of the cable, and also to form parallel, conductive shunting paths between the ground lines at predetermined intervals to correct for excessive attenuation caused by skewing of the signal conductors with respect to the ground lines.

3,818,118

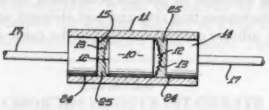
SOLID STATE ELECTRONIC ELEMENT ENCAPSULATION WITH END CONTACTING BLISTER FORMATION

Kenneth R. Bennett, San Diego, and Joseph W. Crownover, La Jolla, both of Calif., assignors to GTI Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 263,950, June 19, 1972, abandoned. This application June 21, 1973, Ser. No. 372,217
Int. Cl. H05k *5/06*
U.S. Cl. 174—52 S **17 Claims**

A method of making extended electrical contact with the terminal of an encapsulated solid state electrical element involves confining noble metal oxide particles proximate the ter-

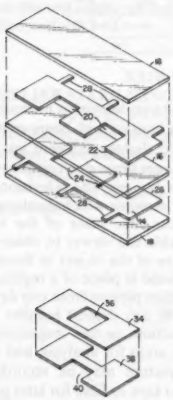
minal within the envelop, and effecting heating of the particles to cause blister formation characterized by particle decomposition with oxygen release and formation of active noble metal surfaces urged into intimate contact with the chip terminal.



3,818,119
MINIATURE POWER BUS FOR PRINTED CIRCUIT BOARDS

James F. Sutherland, Pittsburgh, and Earl T. Farley, Glenshaw, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 23, 1972, Ser. No. 265,905
Int. Cl. H02g *5/00;* **H01b** *7/08, 13/00*
U.S. Cl. 174—72 B **4 Claims**



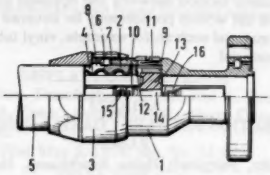
An improved miniaturized electrical bus conductor is detailed comprising laminated thin parallel conductor strips which are separated and encapsulated by insulating material. The structure of the conductive strips is such that at spaced positions along the length of the bus conductor there is a non-overlapping relationship across the full width of the bus conductor so that the electrical bus conductor can be cut to a desired length at these non-overlapping positions without shorting the conductor strips.

3,818,120
COAXIAL PLUG CONNECTOR

Georg Spinner, Erzgie bereistr. 33, 8 Munchen 2, Germany

Filed Mar. 6, 1973, Ser. No. 338,452
Claims priority, application Germany, Mar. 9, 1972, 2211466
Int. Cl. H02g *15/04;* **H01r** *13/36*
U.S. Cl. 174—75 C **10 Claims**

The specification describes a coaxial plug connector, preferably for air-space insulated cable, and which is adapted to be sealed by means of self-curing synthetic resin injected into annular sealing chambers. The connector comprises a cable attachment part which is provided with annular grooves.

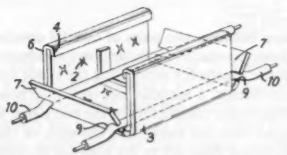


These grooves form the annular sealing chambers and are connected with each other and with a filling opening by radial slots.

3,818,121
JOINTING CLIPS FOR INSULATED CONDUCTORS

John Leslie Hilton, Ringwood, and Arthur Manthorpe Faulkner, Swindon, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Jan. 23, 1973, Ser. No. 326,165
Claims priority, application Great Britain, Jan. 28, 1972, 4154/72
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **3 Claims**

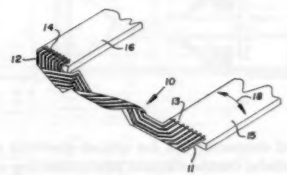


In a channel-type insulation-piercing insulated cable-jointing clip for use with a hand crimping tool, the insulating cover has, at the channel bottom, two bib-like end extensions with cut-outs for locating the two conductors to be joined in position for the crimping of the clip.

3,818,122
FLEXIBLE PRINTED CIRCUIT INTERCONNECTING CABLE

Edwin Jerome Luetzow, Northfield, Minn., assignor to G. T. Schjeldahl Company, Northfield, Minn.

Filed May 29, 1973, Ser. No. 364,367
Int. Cl. H02g *15/08*
U.S. Cl. 174—86 **15 Claims**



A flexible printed circuit interconnecting cable which includes a flexible circuitry assembly including an array of conductors mounted on a flexible substrate film and covered with a flexible covering film. In order to achieve flexure through a plurality of coordinates of planes, the substrate is cut or slit longitudinally between mutually adjacent pairs of conductors,

and thereafter opposed end segments of the assembly are twisted relative to each other so as to achieve a plurality of independent helices which will provide a flexural plane for any desired relative motion between the opposed ends of the assembly. The slit wound portion may be covered with a sleeve of flexible material such as, for example, vinyl tubing or metallic spring material.

3,818,123

CONNECTION BETWEEN COAXIAL CONDUCTOR PAIRS

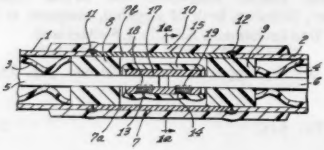
Georg Maltz, Burgdorf; Heinz Buschkamp, Hannover, and Hans Schonfeld, Hamelerwald, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte, Hannover, Germany

Filed May 5, 1972, Ser. No. 250,489

Claims priority, application Germany, May 17, 1971, 2124428

Int. Cl. H02g *15/08*

U.S. Cl. 174—88 C **6 Claims**



Connection between two pairs of coaxial conductors, each having an inner conductor, tubular outer conductor and insulative dielectric means for supporting the outer conductor on the inner conductor; a metallic sleeve is interposed between the ends of the outer conductors of the two pairs; a shrinkable hose is slipped over the sleeve and the ends of the two outer conductors; solder rings are in the hose for providing metallic bond connection to the sleeve and the ends of the tubes; and means for separately interconnecting the inner conductors inside of the sleeve.

3,818,124

CABLE CONNECTOR BOX

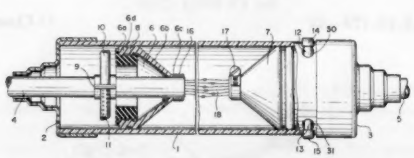
Karl Jirka, Munich, Germany, assignor to Kunststoffwerke Gebrueder Anger GmbH & Co., Munich, Germany

Filed June 23, 1972, Ser. No. 265,641

Claims priority, application Germany, June 25, 1971, 2131686

Int. Cl. H02g *15/08*

U.S. Cl. 174—93 **5 Claims**



A sealed connector box for spliced electrical cables comprises a tubular central element interconnecting a pair of end elements to define a closed chamber within which electrical cable ends are inserted through small diameter end openings of the end elements and are spliced within the chamber. A conical sealing element is slid over each end of the electrical cable on both sides of a splice and each sealing element has an outer end which sealingly engages the inner face of the tubular central element. A ring has a peripheral surface supporting the inner face of the outer sealing end of each sealing element. The outer end sealing surface of each sealing element may comprise one or more corrugations which closely engage the inner face of the tubular central element. A bolt interconnects the tubular element to clamps positioned on each cable end between the supporting ring and end element so as to securely couple the tubular central element to the cable ends.

3,818,125

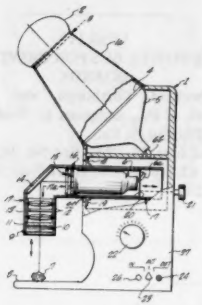
STEREO TELEVISION MICROSCOPE

James F. Butterfield, 13952 Weddington Ave., Van Nuys, Calif. 91401

Filed Oct. 26, 1971, Ser. No. 192,012

Int. Cl. H04n *9/54*

U.S. Cl. 178—6.5 **28 Claims**



There is disclosed herein a stereo television microscope apparatus and system including a housing with beam splitting optics therein which pick up two slightly different images of a small object and relay such images through an optics system to the pickup tube of a television camera. The television camera is connected with a television monitor which displays the two adjacent images. Optics in the face plate of the hood associated with the monitor enable the viewer to observe a single magnified television picture of the object in three dimensions. The instrument can be used in place of a regular optical stereo microscope. The television picture from one device can be connected to and viewed by any desired number of other such devices for group instruction, on-line inspection, transmission of pictures to remote areas for analysis, and so forth. Also, the stereo television picture may be recorded on a recording media, such as video tape or film, for later playback.

3,818,126

FACSIMILE SYSTEM

Sergei M. Fomenko, Woodland Hills; Frank B. Coker, Glendale; Frank W. Hauser, Santa Monica; Alex M. Muller, Palos Verdes; Remy J. Smith, Tujunga, and Theodore Winston, Burbank, all of Calif., assignors to Telautograph Corporation, Los Angeles, Calif.

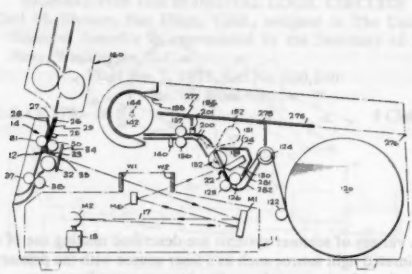
Filed Aug. 23, 1972, Ser. No. 283,031

Int. Cl. H04n *1/12, 1/24;* **G03b** *27/10*

U.S. Cl. 178—6 **37 Claims**

A facsimile system is disclosed comprising a single unit of modular design at each of the transmitter and receiver stations. Each unit is convertable to operate in either a transmit mode or a receive mode or both, in which case the unit is a transceiver. Common optics, including a single galvanometer, is used for both modes. When the leading edge of an input copy, inserted either manually or automatically, is sensed the unit transmits a carrier of a first frequency modulated by sync pulses during a first selected period to the receiver station. Thereafter, video, derived from scanning the input copy, is transmitted on carrier of a second frequency until the trailing edge of the input copy passes a scan station. Thereafter, the carrier of the first frequency is transmitted during a fixed

second selected period. In the receiver station, which does not require attendance, the sync pulses received during the first period on the carrier of the first frequency are used for galvanometer synchronization. When the carrier of the second frequency is received the leading portion of a roll of light exposable paper is advanced passed a print station. The received



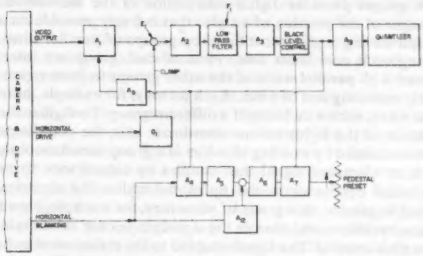
video modulates a laser beam which is reflected to the paper at the print station by the galvanometer. The paper advances passed the print station whereat it is exposed as long as the carrier is of said second frequency. When the frequency changes back to the first frequency the exposed paper portion is cut from the rest of the roll and is fed to a developing unit at a controlled uniform rate.

3,818,127

BASE LINE STABILIZING CIRCUIT FOR VIDEO INSPECTION MACHINE

William H. Walter, East Granby, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Jan. 31, 1973, Ser. No. 328,375
Int. Cl. H04n *5/18, 7/18*
U.S. Cl. 178—6.8 **5 Claims**



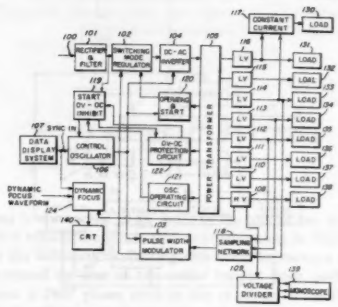
A liquid filled transparent container is spun momentarily, and successive video voltage patterns or frames are generated by a video camera while the liquid and any particles to be detected are still swirling, and the container is held stationary. Prior to digitizing the voltage peaks in each of these video frames so that they can be electronically compared one frame to another, the video output of the camera is processed to stabilize the pedestal or base voltage which represents the "black level" in the video voltage patterns representing the successive frames. The voltage peaks are then compared to a threshold voltage and digital voltage peaks generated whenever this threshold value is exceeded as measured with respect to the pedestal or base line voltage. Circuitry is described for continuously amplifying the video signal, for synchronously clamping it, and for stabilizing the present pedestal voltage by horizontally blanking the resulting signal, and by inverting and blanking the signal once again to achieve a low signal level which is then continuously fed back to the black level control for stabilizing the pedestal voltage at a level which does not vary within each scan line of each video frame as is characteristic of conventional video frame base line voltages.

3,818,128

DISPLAY POWER SYSTEM

Derek Chambers, Framingham, Mass., and A. Leonard Harley, Norwalk, Conn., assignors to Raytheon Company, Lexington, Mass.

Filed May 6, 1970, Ser. No. 34,932
Int. Cl. H04n *3/18*
U.S. Cl. 178—6.8 **9 Claims**



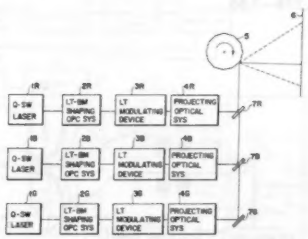
A display and power supply system in which the power supply uses a switching frequency which is higher than the highest linear deflection rate used in a cathde ray tube display device supplied by the power supply and in which the frequency of the power supply and the information repetitively displayed on the display are synchronized to eliminate interference of the power supply frequency with the display characteristics.

3,818,129

LASER IMAGING DEVICE

Manabu Yamamoto, Odawara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 27, 1972, Ser. No. 266,636
Claims priority, application Japan, June 30, 1971, 46-47214; Mar. 17, 1972, 47-26566; Mar. 17, 1972, 47-26567
Int. Cl. H04n *5/66*
U.S. Cl. 178—7.3 D **16 Claims**



This invention relates to the imaging device in which a spatial picture corresponding to an original picture is reproduced from a time-sequence video-signal corresponding to said original picture. Said device comprises means with which an acoustic wave propagated through an acousto-optic medium such as the transparent saphire crystal is modulated by said

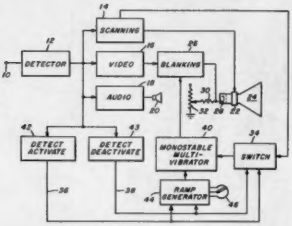
time-sequence video-signal, thereby to convert a time-sequence distribution of said signal into a spatial distribution of an optical property of said medium, and means which irradiates pulse laser light beam and which emits said light beam in a manner to be synchronized in time with said video-signals. If the laser light beams of different colors is used in this device, the multi-color imaging device is obtained.

3,818,130

READING PACER FOR EDUCATIONAL TELEVISION

Marcus H. Uhler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1973, Ser. No. 322,240
Int. Cl. H04n *5/24, 5/48*
U.S. Cl. 178—7.5 R **5 Claims**



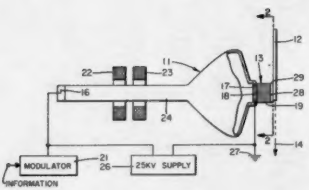
A reading pacer for educational television systems wherein blanking pulses of increasingly greater widths are employed to blank out successive lines of printed material appearing on a television screen starting from the top of the screen and progressing to the bottom. A ramp generator under the control of the viewer of the screen is used to control the generation of blanking pulses of successively greater widths and, hence, the rate at which successive lines of printed material on the screen are blanked out.

3,818,131

FIBER OPTIC CATHODE RAY TUBE WITH ANTI-STATIC DISCHARGE MEANS

Lawrence D. Emmons, Santa Clara, Calif., assignor to Ampex Corporation, Redwood, Calif.

Filed Feb. 2, 1970, Ser. No. 7,466
Int. Cl. H01j *29/89*
U.S. Cl. 178—7.85 **5 Claims**



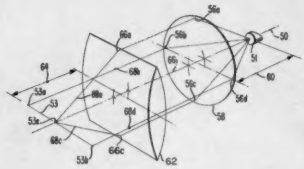
A transparent pressure sensitive adhesive tape type insulating layer is bonded to the faceplate of a fiber optic cathode ray tube.

3,818,132

COLLIMATED LIGHT SOURCE SCANNER SYSTEMS

Raymond L. Fowler, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,748
Int. Cl. H04n *3/02*
U.S. Cl. 178—7.6 **6 Claims**



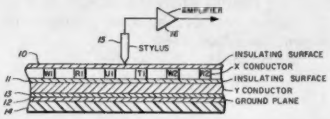
A variety of scanner systems are described making use of a collimated light source such as a laser source with the primary objective of scanning information by successive line scans.

3,818,133

COORDINATE DIGITIZER INCREMENTAL SYSTEM

William L. Cotter, 70 Neptune St., Beverly, Mass. 01915

Continuation-in-part of Ser. No. 130,969, April 5, 1971, Pat. No. 3,732,369. This application Apr. 6, 1973, Ser. No. 348,688
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **4 Claims**



A system provides digital information of the incremental changes of the position of a stylus that is freely movable on a platen having a grid constituted by groups of parallel wires. Along each coordinate axis, wires of each group are interleaved with parallel wires of the other groups to form repetitively recurring sets of wires. Each set may, for example, have four wires, each wire being of a different group. To digitize the position of the stylus on one coordinate axis, the coordinate axis is scanned by exciting all wires of a group simultaneously with an electrical signal that couples by capacitance to an electrical conductor at the tip of the stylus. the electrical signal impressed on a group of wires may, for example, have a characteristic modulation or the signal may occur in an exclusive time interval. The signal coupled to the stylus can thus be identified as originating from a specific wire group. The stylus signals are combined to derive "sine" and "cosine" signals. The "sine" and "cosine" signals are periodic waveforms which are generated when the stylus is moved along the coordinate axis. The periodic waveforms divide the platen into divisions and subdivisions. The ratio of the "sine" signal to the "cosine" signal gives the position of the stylus on the coordinate axis. However, that position recurs periodically along the axis. As the stylus moves along the platen, each crossing of a subdivision causes the generation of a pulse which is emitted at one output for one direction of stylus movement along the axis and is emitted at a different output for movement of the stylus in the opposite direction. The pulses are accumulated in an up-down (viz., reversible) counter which keeps track of the stylus position along one coordinate axis. The position of the stylus along the other (i.e., second) coordinate axis is obtained by scanning the second axis in a similar manner and accumulating the pulses in a second up-down counter. The informa-

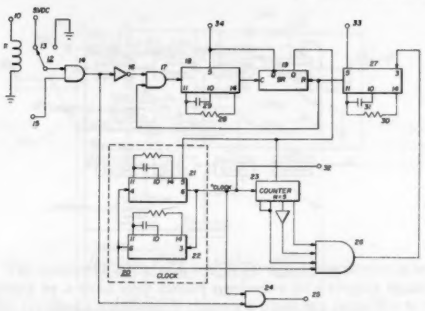
tion in the up-down counters is continually up-dated by alternately scanning the two coordinate axis at a rapid rate to permit the track of the stylus to be accurately reconstructed.

3,818,134

APPARATUS FOR CONVERTING TELETYPEWRITER SIGNALS FOR USE IN DIGITAL LOGIC CIRCUITS

Carl M. Firman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 2, 1973, Ser. No. 320,240
Int. Cl. H04l 3/00
U.S. Cl. 178—26 R **4 Claims**



Teletypewriter signals including a start signal, data information defined by signal transitions occurring within a predetermined number of repetitive uniform data periods, and a stop signal are operated upon so that they are converted to signals adapted for use in digital logic circuits in a unique manner which avoids electromagnetic interference of both the radiated and conducted types. The start signal is used for producing a delayed enabling signal after the occurrence of the signal transition point of the first of the uniform data periods and a clock, responsive to the enabling signal, produces sampling pulses at the same rate as the repetition rate of the uniform data periods. The sampling pulses sample the incoming data information within each data period and produce commensurate output data information in the form of pulses usually of low voltage type for use in digital logic circuits. A counter responsive to the same enabling circuit sequentially counts the number of sampling pulses and produces an output signal indicative of a cummulative count equal to the predetermined number of repetitive uniform data periods and the output signal is employed to reset both the clock and the counter means. As a result, all the signals adapted for use in digital logic circuits are produced and generated at times other than during the occurence of signal transitions of the incoming teletypewriter signal thus eliminating the generation of false signals as well as the effects of unwanted electromagnetic interference of both the radiated and conducted types.

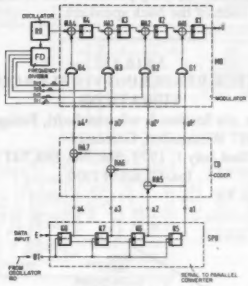
3,818,135

CIRCUITRY FOR TRANSMISSION OF PHASE DIFFERENCE MODULATED DATA SIGNALS

Armin Tannhauser, Gerokstrasse 8, 8 Munich 25, Germany

Filed Sept. 24, 1971, Ser. No. 183,588
Int. Cl. H04l 27/20
U.S. Cl. 178—67 **5 Claims**

A circuit is described for transmitting phase difference modulated data signals, i.e., where the information being transmitted is contained in phase shifts of the transmitted carrier. A transmission oscillator emits a rectangular periodic signal having a frequency equal to n times the carrier frequency, where *n* equals the number of different phase values or data levels to be transmitted. The oscillator output frequency is reduced to the carrier frequency by means of binary divider stages. The binary data to be transmitted are coupled to a coder which combines the various data levels falling within a given modulation segment and determines the phase shift to be transmitted according to the code being used. The coder has a separate output line for each phase shift value, and each



such output is connected to an input of the one of the divider stages which effects the phase shift corresponding to that output. Upon the initiation of a new modulation segment, a short pulse is emitted on one of the coder output lines, and this pulse causes a 360° phase shift in the rectangular oscillator output. Each subsequent divider stage divides this phase shift in half to realize the desired phase shift for the data level combination being transmitted.

ERRATUM

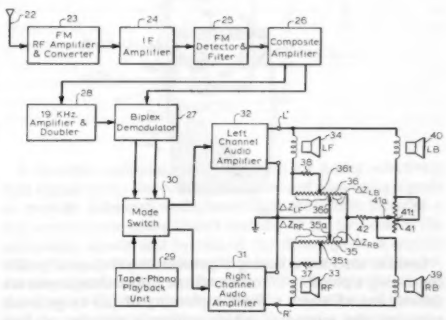
For Class 179—1 see:
Patent No. 3,816,917

3,818,136

FOUR-CHANNEL FRONT-TO-BACK BALANCE CONTROL

Wayne M. Schott, Des Plaines, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 27, 1972, Ser. No. 248,285
Int. Cl. H04n 5/00
U.S. Cl. 179—1 GQ **4 Claims**



A front-to-back balance control circuit in a quadraphonic playback system for adjusting the sound output levels of a front pair of speakers relative to a back pair while simultaneously varying the phase differential between the back

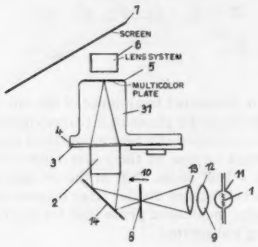
speakers. The balance control utilizes a ganged potentiometer arrangement wherein a potentiometer is serially-connected with each front speaker to concurrently adjust the sound output of each speaker to corresponding levels. The ganged potentiometer arrangement also provides a variable impedance signal path common to the back speakers for varying their sound output levels inversely in response to adjustments in the sound output level of the front speakers. The common signal path is further effective to serve as a variable coefficient matrixing means for applying portions of a first and a second input signal to each of the back speakers.

3,818,137

DEVICE FOR RENDERING VISIBLE ACOUSTIC VIBRATIONS

Manfred Kage, c/o Institut f. wissenschaftl, Fotografie, Turmstrasse 4, 7057 Winnenden, Germany

Filed July 1, 1971, Ser. No. 158,741
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 VS **25 Claims**



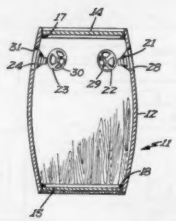
The invention relates to a device for rendering visible acoustic vibrations, in which a fluid medium held on a foundation is caused to execute wave notions with the help of a movable wall or wall section, and in which the wave motions thus engendered are rendered optically visible.

3,818,138

BARREL SHAPED SPEAKER ENCLOSURE

Augustine J. Sperrazza, Jr., 504 Broadway, Troy, N.Y. 10180

Filed July 26, 1971, Ser. No. 166,057
Int. Cl. H04r *1/28*
U.S. Cl. 179—1 E **9 Claims**



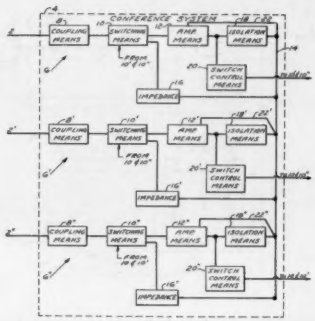
Speaker enclosure having a general barrel-shaped profile containing a plurality of loudspeakers. Two embodiments are shown, one of which utilizes a plurality of full range loudspeakers, the second of which utilizes a plurality of high frequency loudspeakers in combination with a low frequency loudspeaker. The curved shape of the sidewall of the speaker enclosure provides substantial improvement in sound reproduction and, combined with the plurality of speakers, produces an omnidirectional sound source that projects breadth as well as depth to achieve true realism in phonetic reproduction. The speakers are so positioned in the barrel shaped enclosure that the sound emanating from the back of an individual speaker is reflected downwardly by the internal surface of the opposite sidewall to a point other than the back of the same speaker.

3,818,139

MULTIPATH CONFERENCE SYSTEM WITH SWITCHING

Robert G. Snyder, P.O. Box 411, Dania, Fla. 33004

Continuation of Ser. No. 191,667, Oct. 22, 1971, abandoned.
This application July 23, 1973, Ser. No. 381,374
Int. Cl. H04m *9/00*
U.S. Cl. 179—1 CN **3 Claims**



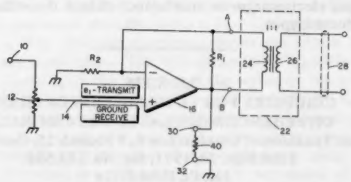
A conference system for a multi-path communication network including a plurality of interconnected channel units each of which is connected to a separate communication path. Each channel unit includes a coupling means, switching means, an amplifier means, an isolation means, a switch control means and a signal bus. The coupling means is connected to the amplifier means or the signal bus by the switching means. The output of the amplifier means is connected to an isolation means and a switch control means. The isolation means is connected to the signal bus. The switch control means is connected to the switching means of each other channel unit in order to switch the coupling means of the other units from the amplifying means to the signal bus when said switch control means is activated.

3,818,140

TELEPHONE LINE RECEIVER AND TRANSMITTER

Norman Green, and William C. Vergara, both of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 17, 1972, Ser. No. 307,741
Int. Cl. H04m *1/06*
U.S. Cl. 179—2 C **3 Claims**



A telephone line receiver transmitter designed to an interface with a 600 ohm telephone line through a standard telephone system data coupler uses a single operational amplifier and operates without switching. The operational amplifier

includes a 600 ohm feedback resistor with the telephone system data coupler being connected across the resistor.

3,818,141

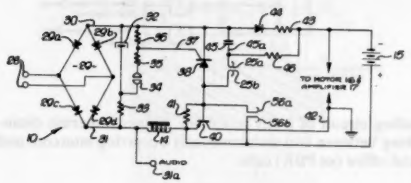
CONTROL CIRCUIT FOR TELEPHONE ANSWERING DEVICE

Sava Jacobson, 8130 Orion St., Van Nuys, Calif. 91406

Filed May 19, 1972, Ser. No. 254,924

Int. Cl. H04m *1/64*

U.S. Cl. 179—6 R **12 Claims**



The answering cycle of a telephone answering device is initiated by a solid state circuit responsive to a ringing signal. The rectified ringing signal charges a triggering capacitor to a level sufficient to turn on a controlled rectifier. Conduction of the controlled rectifier effectively connects an inductor as a load across the telephone line, and biases on a transistor to switch power to the motor, amplifier and other components of the answering device. At the end of the answering cycle the controlled rectifier is turned off, thereby unloading the telephone line and disconnecting power from the answering device. Operation of the answering device is inhibited when insufficient tape remains for recording additional incoming messages.

3,818,142

DEVICE FOR PRODUCTION OF SWITCHING ORDER INFORMATION FOR TRANSMISSION OF PCM WORDS

Nils Herbert Edstrom, Stockholm; Stig Gustaf Wilhelm Lindqvist, Enskede, and Gunnar Erik William Sparrendahl, Handen, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

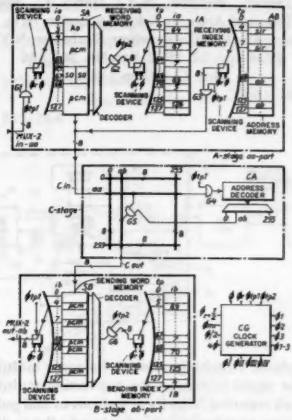
Filed Jan. 29, 1973, Ser. No. 327,493

Claims priority, application Sweden, Feb. 8, 1972, 1446/72

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AT **2 Claims**

A PCM exchange comprising a space stage arranged between time stages is provided with signal receivers and switching order units connected to the space stage. The signal receivers receive signal words each associated with one of the PCM channels transferred on highways through the space stage, for comparison with corresponding signal words previously stored in a state information memory. Upon deviation in the comparison computer of known type computes by means of the signal words switching order information which defines the incoming and outgoing PCM channels for a communication path through the exchange. A control logic selects one of the switching order units and transfers to it the computed switching order information. The switching order unit detects a free time slot for the path through the space stage and the complete switching order information including even the free time slot is transferred not only to switching order memories in the time stages but also to the state information memory. For disconnecting a path, the control logic feeds disconnecting information defining both the time slot and the incoming highway used during the connection to the switching order unit selected for the connection. Through the aid of the



disconnecting information the corresponding switching order and state information memories are zero-set.

3,818,143

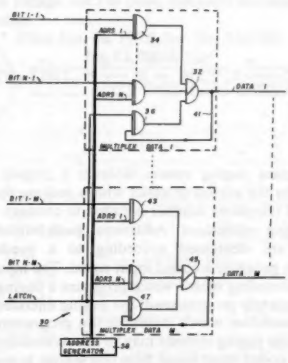
SELF-STABILIZING MULTIPLEXING ARRANGEMENT

James J. Vrba, Berwyn, and Charles K. Buedel, Wood Dale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 2, 1973, Ser. No. 320,331

Int. Cl. H04j *3/04*

U.S. Cl. 179—15 A **4 Claims**

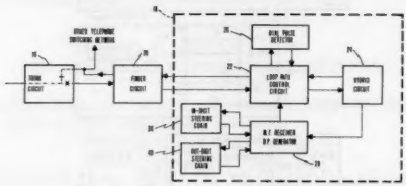


A bi-stable multiplexing arrangement for gating selectively data signals under the control of a source of addressing signals to provide stabilized multiplexed data therefrom includes a first coincidence gating circuit enabled by the first one of the addressing signals and by one of the data signals, a second coincidence gating circuit enabled by a second one of the addressing signals and by another one of the data signals, an output alternative gating circuit enabled by the outputs of the first and second coincidence gating circuits, and a latching coincidence gating circuit enabled by the output of the alternative gating circuit and by a latching signal to cause the output of the alternative gating circuit to be latched in its present condition when the latching coincidence gating circuit is disabled and then enabled.

3,818,144
MULTIFREQUENCY TO DIAL PULSE SIGNAL CONVERTER

Gerbrand Druyff, Webster, N.Y.; Harry C. Mullen, Jr., Newark, Del., and Amin Y. Zaky, Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,326
Int. Cl. H04m *3/02*
U.S. Cl. 179—16 EC **19 Claims**

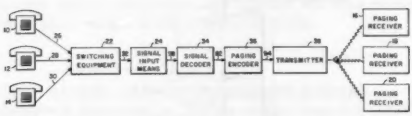


In a telephone switching network having a multifrequency to dial pulse signal converter for converting multifrequency calling signals received from local stations to dial pulse signals for transmission to other switching networks the multifrequency calling signals are separated from the dial tone transmitted back from the other switching networks before being processed by the converter. The converter is also designed to process an unlimited number of calling signals.

3,818,145
RADIO PAGING SYSTEM

John R. Hanway, Murrysville, Pa., assignor to United Engineering Corporation, Fairmount, W. Va.

Filed July 19, 1972, Ser. No. 273,043
Int. Cl. H04q *7/04*
U.S. Cl. 179—41 A **6 Claims**



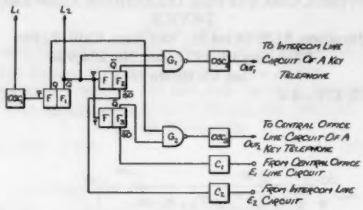
Direct-access paging system wherein a paging signal is originated by the person or caller who is making the page. A preassigned telephone number is called to connect the caller to the paging equipment. Additional push-buttons on the telephone are depressed according to a predetermined sequence to generate a coded input signal. The input signal is applied to decoding means which programs a paging encoder. When completely programmed, the paging encoder activates a radio transmitter which transmits the programmed paging signal. Similar paging systems may be interconnected by transmitting the coded input signal from one system to another.

3,818,146
SIGNAL INTERRUPTER CIRCUIT FOR A KEY TELEPHONE SYSTEM

Hachiroh Takubo, Kawasakishi, and Fumio Tsutsumi, Yokohama, both of Japan, assignors to Nippon Tsu Shin Kogyo K.K., Kanagawa-ken, Japan and TIE/Communications, Inc., Stamford, Conn.

Filed Apr. 5, 1973, Ser. No. 348,278
Claims priority, application Japan, Jan. 9, 1973, 48-4975
Int. Cl. H04q *1/30*
U.S. Cl. 179—84 A **3 Claims**

An interrupter circuit for a key telephone system is disclosed by which a plurality of flip-flop circuits, oscillators and NAND gates are used to generate two staggered periodic signals each representing one of two simultaneously occuring continuous signals. The circuit finds application in the audible

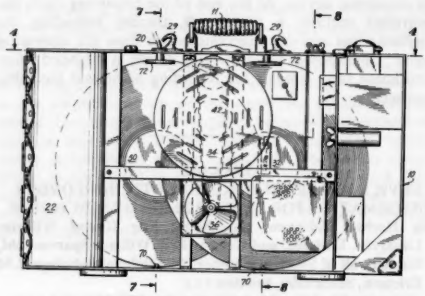

To Intercom Line Circuit Of A Key Telephone
To Central Office Line Circuit Of A Key Telephone
From Central Office Line Circuit
From Intercom Line Circuit

signalling circuit of a key telephone system to permit distinguishing between two simultaneously occurring intercom and central office (or PBX) calls.

3,818,147
PORTABLE VOICE MESSAGE GENERATOR

Gerard J. O'Brien, 33 Pamrapo Ave., Jersey City, N.J. 07307

Filed Feb. 22, 1972, Ser. No. 227,760
Int. Cl. G11b *3/30, 3/78*
U.S. Cl. 179—100.4 R **7 Claims**

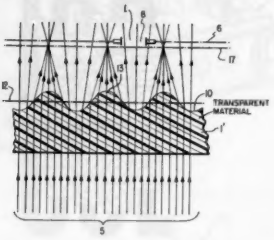


A pair of circular record disks are mounted, in partially overlapping relationship, inside a carrying case and in close proximity to one surface thereof. The records are rotated by a frictional-engagement mechanism powered by an electrical motor and are impressed with a plurality of recorded message elements on parallel grooves; each of these grooves being accessible from the outside of the carrying base by means of a perforation in the surface of the case. Any one of the prerecorded message elements may be broadcast by inserting a pickup wand, incorporating a needle connected to a transducer, into the appropriate perforation in the carrying case and allowing it to rest on the groove below the perforation. An electronic amplifier, connected to the pick-up wand, and a speaker, connected to the output side of the amplifier, are also mounted in the carrying case. Any message whose vocabulary is restricted to the pre-recorded components may be generated and broadcast by sequentially inserting the pick-up wand into the appropriate perforations in the surface of the carrying case.

3,818,148
RADIATION TRANSDUCER SYSTEM WITH COLLIMATED BEAM READOUT OF LENS MODULATION ELEMENTS

Gerhard Dickopp, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Continuation of Ser. No. 5,341, Jan. 23, 1970, abandoned.
This application Sept. 29, 1972, Ser. No. 295,011
Claims priority, application Germany, Jan. 23, 1969, 1903822
Int. Cl. G11b *11/18*
U.S. Cl. 179—100.4 R 13 Claims

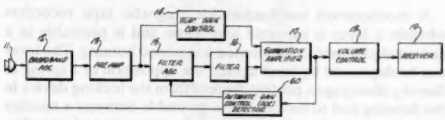


A method and apparatus for reproducing signals stored on a carrier in the form of undulations corresponding to the signals, the undulations generally being formed as a spiral groove. The undulations on the carrier are moved past a suitable radiation source, such as a light source, and the density of the radiation emanating from the undulations, which is a function of the curvature of the undulation, is detected by a suitable radiation detecting means after it passes through a suitable slit aperture arranged at a predetermined distance from the carrier surface, so that variations in the density are a function of the undulations. The undulations may be either frequency or phase modulated with respect to the signal and their amplitude can be modified as a function of their recorded wavelength in such a manner that the curved surface portions of the undulations have nearly the same focal length for all occurring wavelengths. The carrier can have at least one recording surface in which is formed a groove having a trapezoidal cross section and having its bottom surface provided with the undulations.

3,818,149
PROSTHETIC DEVICE FOR PROVIDING CORRECTIONS OF AUDITORY DEFICIENCIES IN AURALLY HANDICAPPED PERSONS

William P. Stearns; Vernon O. Blackledge, both of Scottsdale, and John S. Rohrer, Tempe, all of Ariz., assignors to Shalako International, Inc., Scottsdale, Ariz.

Filed Apr. 12, 1973, Ser. No. 350,415
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD 19 Claims

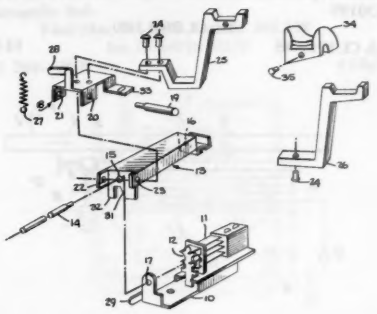


Electronic circuitry for providing compensatory amplification for aurally handicapped persons. The electronic circuitry divides the audible frequency spectrum into a plurality of adjacent frequency bands through the use of an adjustable filter network to provide compensatory amplification in a prosthetic device in a practical wearable form.

3,818,150
TELEPHONE SWITCHHOOK WITH BI-DIRECTIONAL OPERATION

Isao Kunimine, Kanagawa, Japan, assignor to Nippon Tsu Shin Kogyo K.K., Kawasaki-shi, Japan and TIE/Communications, Inc., Stamford, Conn., part interest to each

Filed Nov. 2, 1972, Ser. No. 303,189
Claims priority, application Japan, Apr. 27, 1972, 47-49144
Int. Cl. H04m *1/08*
U.S. Cl. 179—164 5 Claims

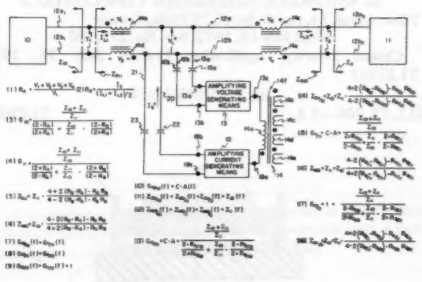


Switchhook apparatus for a telephone subset including a receiver cradle fastened to two interconnected members, mounted for rotation on shafts whose axes are mutually perpendicular.

3,818,151
METHOD AND APPARATUS FOR AMPLIFYING SIGNAL TRANSMISSION THROUGH TRANSMISSION LINES

Charles W. Chambers, Jr., Amherst, and Frederick J. Kiko, Sheffield Village, both of Ohio, assignors to Lorain Products Corporation

Filed Jan. 26, 1973, Ser. No. 326,785
Int. Cl. H04b *3/36*
U.S. Cl. 179—170 T 35 Claims



A circuit for increasing the amplitude of signals transmitted through a two-wire transmission line. Amplifying voltage generating means generates and introduces in series with the transmission line an amplifying voltage that varies in accordance with the signal voltage across the transmission line. Amplifying current generating means generates and introduces in shunt with the transmission line an amplifying current that varies in accordance with the signal current through the transmission line. Gain control means varies the ratio of amplifying voltage to signal voltage and the ratio of amplifying current to signal current, as a function of frequency, to provide frequency compensated gain and impedance matching

for each frequency in the band of frequencies to be transmitted through the transmission line.

3,818,152

DEVICE FOR TRANSMITTING ELECTRICAL ENERGY

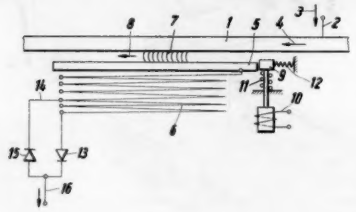
Adil Erk, Braunschweig, and Lutz Bohme, Mascherode, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munchen, Germany

Filed June 14, 1972, Ser. No. 262,683

Claims priority, application Germany, June 18, 1971, 2130199

Int. Cl. B60l *5/00*

U.S. Cl. 191—45 **11 Claims**



A device for transmitting electrical energy from a stationary conductor to a moving load. The load comprises an electrical circuit which is engageable with the stationary conductor to draw power from the electrical conductor. The electrical circuit comprises a current collector which moves in close proximity to the electrical conductor and an electrical arc is formed between the electrical conductor and the current collector. The electrical arc is moved continuously relative to the moving load and to the stationary conductor by the blow field of an electromagnet.

3,818,153

PUSHBUTTON SWITCH ASSEMBLY FOR KEYBOARDS INCLUDING A BRIDGING CONDUCTIVE, ELASTOMERIC DIAPHRAGM TYPE CONTACT

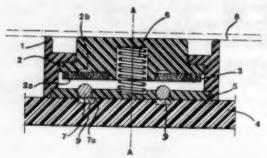
Tibor Arvai, 14, rue de Berri, 75 Paris, France

Filed July 18, 1972, Ser. No. 272,780

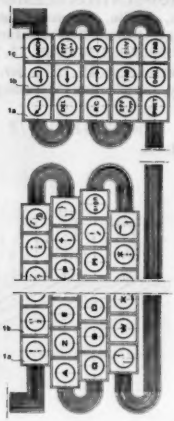
Claims priority, application France, July 27, 1971, 71.27453

Int. Cl. H01h *13/54*

U.S. Cl. 200—5 A **11 Claims**



A pushbutton bears on its front face an elastomer conductive layer, conductive of electricity, of elastomer or elastic material and of limited area, which serves to close a circuit between two conductors of an array; moreover, between the latter and said layer there is arranged an insulating support exhibiting a pre-formed multiplicity of seats the positioning and arrangement of which are designed to be able to receive and hold each one ball or pellet or other equivalent intermediate member so that it can make contact on the one hand with the said conductors and on the other hand, when the pushbutton is depressed, with the said layer. Such an arrangement allows



the use of coded combinations of contacts in a keyboard comprising a set of these pushbuttons.

3,818,154

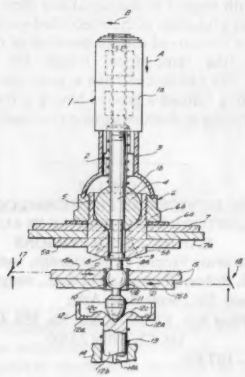
JOYSTICK TYPE CONTROLLER FOR SWITCHES

Shelley M. Presentey, 1268 Henry Farm Dr., Ottawa K2C2E2, Canada

Filed Apr. 9, 1973, Ser. No. 349,547

Int. Cl. H01h *25/04*

U.S. Cl. 200—6 A **10 Claims**



A monocontrol mechanism for magnetic tape recorders wherein a lever is movable lengthwise and is pivotable in a universal joint which is mounted in a sealed housing. The lever can be depressed by hand against the opposition of a spring to thereby disengage a portion thereof from the locking device in the housing and to be thereupon pivotable between a number of predetermined positions against the opposition of an indexing device which is designed to yieldably hold the lever in any selected predetermined position. Once the pressure upon the lever is terminated, the spring is free to expand and reengages the lever with the locking device. The lever can actuate one or more electric switches, gears, links and/or other controlled units in the housing during movement to or from the predetermined positions.

3,818,155

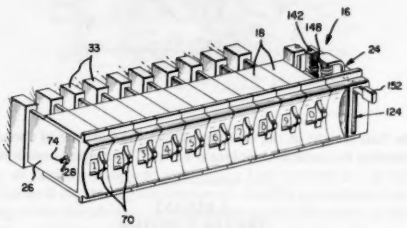
ZERO SETTING MECHANISM FOR PLURAL GANGED THUMBWHEEL COUNTER SWITCHES

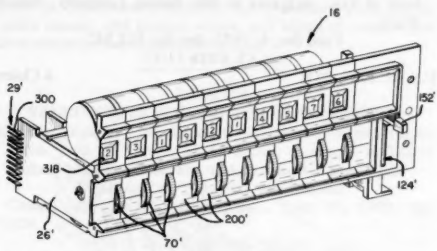
Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 262,394, June 13, 1972, abandoned. This application Apr. 17, 1973, Ser. No. 351,944

Int. Cl. H01h *3/00*

U.S. Cl. 200—18 **26 Claims**





A manually shiftable lever pivots a rack into engagement with a pinion and simultaneously releases a plurality of individual number wheels from their associated spring biased thumb wheels within an array of modular thumb wheel switch assemblies and permits by depression of the lever, pinion rotation of all of the number wheels to reset position, with minimum resistance.

3,818,156

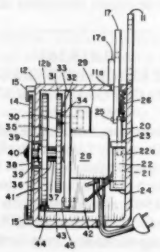
CONTINUOUSLY CYCLING TIMER ATTACHMENT FOR WALL MOUNTED TOGGLE SWITCH

Anthony A. Augustyniak, 14 Cotton Rd., Levittown, Pa. 19057

Filed Dec. 20, 1972, Ser. No. 316,994

Int. Cl. H01h *43/10*

U.S. Cl. 200—33 R **4 Claims**



An actuator device, electro-mechanical in principle of construction, makes use of a commercially available universal timer for setting the desired time of on-off actuation, a limit switch which turns the current on and off to the electric plunger, correspondingly with the setting of the universal timer, which is set by rotating a calibrated dial, and a means for attaching to existing toggle switches which are desired to be automatically turned on and off at a prescribed time interval.

3,818,157

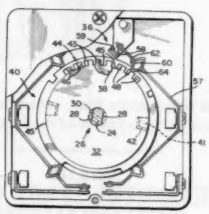
DUAL CAM PULSE TIMER SWITCH

Elmo W. Voland, Indianapolis, and Kenneth E. Deane, Beech Grove, both of Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 26, 1973, Ser. No. 345,130

Int. Cl. H01h *43/10*

U.S. Cl. 200—38 B **4 Claims**



A cam-actuated timer switch utilizes two cams substantially rotating together, but having a small predetermined degree of angular freedom in relation to each other, to produce periods of electrical switch substantially short in duration.

3,818,158

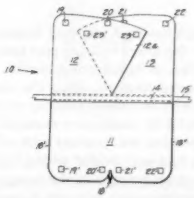
ARTICLE OF CLOTHING CONVERTIBLE TO A HANDBAG

Tadayoshi Nakanishi, 225 Kearny St., Room 407, San Francisco, Calif. 94108

Filed Dec. 18, 1972, Ser. No. 314,992

Int. Cl. A41d *15/04*

U.S. Cl. 2—48 **6 Claims**



A multi-functional garment is provided by a simple basic fabric construction capable of quick conversion into a hood and cape combination, an apron, or a handbag.

3,818,159

MATERIAL LEVEL INDICATOR SENSOR

Arthur J. Evans, Northville, and Chester J. Randolph, Royal Oak, both of Mich., assignors to Whitlock, Inc., Farmington, Mich.

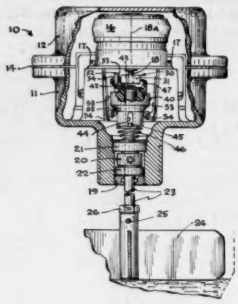
Filed July 19, 1973, Ser. No. 380,608

Int. Cl. H01h *35/00*

U.S. Cl. 200—61.12 **6 Claims**

A level sensing apparatus of the kind comprising a sensing switch actuated by a rotating paddle, with a cam drive connection between the drive motor and the sensing paddle which protects the drive motor from stalling or jamming in either

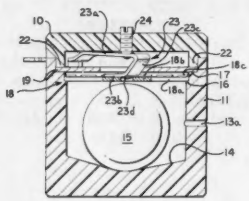
normal or abnormal operation of the level sensing apparatus; the cam drive connection allows continuing unobstructed rotation of the drive motor shaft, when the sensing paddle is blocked, in the event of a failure of the sensing switch.



3,818,160
INERTIA SWITCH WITH BALL ACTUATED DEFLECTABLE CONTACT

Arthur A. Hitchcock, Lima, Ohio, assignor to A. C. B. Corporation, Lima, Ohio

Filed May 14, 1973, Ser. No. 359,781
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 R **10 Claims**



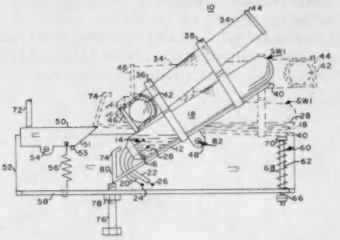
An inertia switch having a two-part housing of electrical insulating material, the lower housing part being provided with a conical ramp surface at its bottom to receive a relatively heavy ball which is adapted to move along the ramp surface in the event of a collision by an automobile, for example, to tilt a segmental disc of electrical conductive material with an upturned peripheral edge portion into contact with a flat electrical conductive ring. The ring is provided with a lead in the form of a tab extending through a notch in the housing part to the outside to receive suitable wires or leads. In engagement with the disc and extending through the center of the ring is an adjustable leaf spring, also of electrical conductive material, the outer end of which extends outside of the housing through a notch in the housing part for connection to a source of electrical energy.

3,818,161
AUTOMATIC FLOATING GRAVITY CONTROLLED MERCURY SAFETY SWITCH WITH RESET MEANS

James W. Richey, R.R. 1, Pisgah, Ala. 35765

Filed Oct. 11, 1972, Ser. No. 296,604
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.47 **5 Claims**

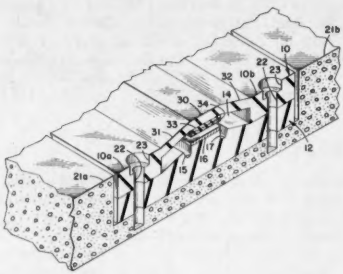
A tilt switch for turning off the ignition of a tractor or other vehicle when it is tilted consisting of a first tube enclosing a mercury switch and second tube having a movable ball weight, the two tubes being mounted in a balanced configuration wherein once this combination is tilted in a selected direction, the ball weight in the one tube shifts the balance of the combination to cause and maintain an "off" switching condition.



3,818,162
TREADLE SWITCH

Gerald M. Monroe, Dallas, and Robert J. Von Bose, Arlington, both of Tex., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 6, 1972, Ser. No. 312,542
Int. Cl. H01h *13/16*
U.S. Cl. 200—86 R **6 Claims**



Disclosed is a treadle switch adapted for placement in an excavation in a roadway with the outer lateral extremities of the switch coplanar with the roadway surface. The central longitudinal portion of the upper portion is elevated above the plane of the roadway surface and carries an electric contact plate on its lower surface within a central longitudinally disposed cavity in register with a lower contact plate. The switch is designed to absorb kinetic energy from the tire tread striking the switch surface when a vehicle passes thereover at high speeds.

3,818,163
VACUUM TYPE CIRCUIT INTERRUPTING DEVICE WITH CONTACTS OF INFILTRATED MATRIX MATERIAL

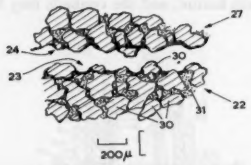
Alfred Alexander Robinson, Stafford, England, assignor to The English Electric Company Limited, Stafford, England

Continuation-in-part of Ser. No. 871,431, Oct. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 641,881, May 29, 1967, abandoned. This application July 15, 1971, Ser. No. 162,881
Claims priority, application Great Britain, Nov. 27, 1966, 23780/66
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **14 Claims**

The specification discloses an electric circuit interrupting device in which the contacts are enclosed in an evacuated en-

closure, and in which the contact material comprises a matrix of a low ductility semi-refractory metal infiltrated with a metal of high electrical conductivity.

The metals are chosen so that during alternating current arcing (a) the loss of heat by vapourisation of the metals at the surface of a molten anode spot prevents the anode spot rising to a temperature at which substantial electron emission occurs, so that the ability to interrupt a high current arc at the next natural current zero is improved, and (b) precipitation alloying of the metals occurs, with consequent refinement of the matrix structure at the contact surface so that the performance of the interrupter is improved by conditioning of its contacts. Chromium and cobalt are specifically proposed as matrix metals, and copper, silver, and alloys of copper and silver are proposed as infiltrant metals.



3,818,164

VACUUM TYPE ELECTRIC CIRCUIT BREAKER

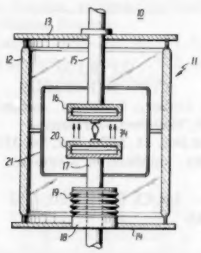
Hirohiko Mizutani, Yokohama; Osami Morimiya, and Shigeo Soma, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Sept. 18, 1972, Ser. No. 289,965

Claims priority, application Japan, Sept. 16, 1971, 46-71224

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **3 Claims**



A vacuum type electric circuit breaker includes a highly evacuated envelope of electric insulating material and a pair of relatively movable electrodes located in the envelope. At least one of the electrodes has a contact assembly at one end thereof, the contact assembly comprising first and second disc members in parallel. The first disc member being secured mechanically and electrically to the one end of the electrode at its center portion, and the second disc member having a peripheral portion secured to a corresponding peripheral portion of the first disc member. An electric contact is provided at the center area of the second disc member so as to make and break an electric circuit with an electric conductor of the other electrode. There is provided an electric current path in the contact assembly for containing a magnetic field surrounding an electric arc which is established between the contact assembly and the contact of the other electrode and for preventing the electric arc from the dispersion thereof when the electric circuit may be opened by the separation of the contacts.

3,818,165

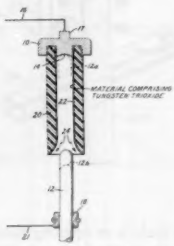
ELECTRIC CIRCUIT INTERRUPTER

Peter D. Zavitsanos, Norristown; J. Kenneth Wittle, Berwyn, both of Pa., and John E. Zlupko, Delran, N.J., assignors to General Electric Company, Philadelphia, Pa.

Continuation of Ser. No. 261,266, June 9, 1972, abandoned. This application Apr. 26, 1973, Ser. No. 354,538

Int. Cl. H01h *33/08*

U.S. Cl. 200—144 C **5 Claims**



Discloses a circuit interrupter in which an arc is established during circuit interruption. Along the path of the arc, there is provided arc-extinguishing structure from which arc-extinguishing gas is evolved by the heat of the arc. The arc-extinguishing structure is of a material comprising tungsten trioxide, and the evolved gas comprises vapors of tungsten trioxide.

3,818,166

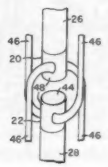
CONTACTS FOR VACUUM INTERRUPTER OF SMALL OUTSIDE DIAMETER

Werner S. Emmerich, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 232,083, March 6, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 390,964

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **12 Claims**



A vacuum type circuit interrupter is provided having separable mating contacts. Multiple arc rails are attached to each contact, the arc rails extend from the contact to which they are attached past the mating contact. The arc rails extend from the contact in a direction substantially parallel to the supporting rod means of the mating contact, so as to provide paths between the arc rails and the supporting rod means along which an arc formed during circuit interruption can travel.

3,818,167

SWITCH MECHANISM FOR AN OIL SWITCH

Lynn R. Vantine, Tulsa, Okla., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

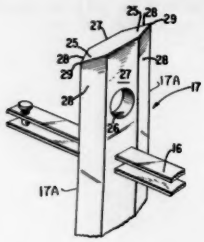
Filed July 19, 1973, Ser. No. 380,826

Int. Cl. H01h *33/68*

U.S. Cl. 200—150 C **6 Claims**

The switch mechanism for an oil switch comprises a number of switch blades rigidly interconnected by a crossbar to form a single unit which is movable between open and closed posi-

tions with respect to stationary switch contacts. Both the switch contacts and switch blades are submerged in oil. The edges of the crossbar in the direction of movement of the unit

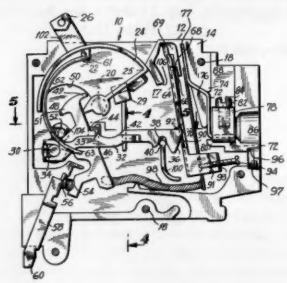


are beveled, and there is an opening through the crossbar immediately below the level of oil so as to inhibit cavitation as the switch is operated.

3,818,168
LATCH MECHANISM FOR TOGGLE ACTUATED CIRCUIT BREAKER

Alexander R. Norden, New York, N.Y., assignor to General Switch Company, Great Neck, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,283
Int. Cl. H01h *3/46*
U.S. Cl. 200—153 G **6 Claims**



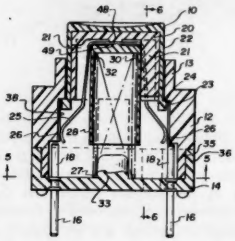
A new and improved circuit breaker is provided and comprises a breaker housing of a readily available and relatively inexpensive material which is particularly resistant to tracking to prolong the operational life of the breaker, and latch arm locating means within said housing which greatly reduce the effects of housing dimensional instability upon the calibration and operation of the breaker and provide for extremely precise breaker operation.

3,818,169
PUSH BUTTON SWITCH

William D. Kobernus, La Grange Park, Ill., assignor to Grayhill, Inc., La Grange, Ill.

Filed Mar. 12, 1973, Ser. No. 340,251
Int. Cl. H01h *13/64*
U.S. Cl. 200—159 A **18 Claims**

Simple low profile multi-contact push button switch assembly with movable contacts positioned within the push button itself. The push button slides within a tubular housing secured to a bass in which conducting pins are mounted. The push button is spring biased with respect to the base and moves to bring the contacts into engagement with the conducting pins. The movable contacts have relatively long spring arms with ends which move along ribs in the housing and into wiping engagement with fixed contacts formed by the conducting pins. One or more movable contacts can be provided with each push button, and the contacts may be of different



shapes and can be interconnected to provide different switching arrangements. The conducting pins extend through the base forming terminals for connection to a circuit, and the base may be mounted directly on a printed circuit board with the terminals soldered to the conductors thereon. To facilitate the layout of the circuit on the board, the conducting pins are staggered, and the ends of the movable contacts are offset to directly engage the pins. A plurality of switches may be provided in an array for various applications, such as to provide numerical, coded keyboards.

3,818,170
CONTACT BRIDGE

Siegfried Seidel, Amberg, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed Dec. 11, 1972, Ser. No. 313,997
Claims priority, application Germany, Dec. 11, 1971, 2161616
Int. Cl. H01h *1/20, 1/32*
U.S. Cl. 200—165 **16 Claims**

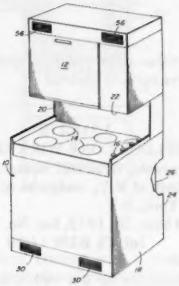
A contact bridge is disclosed which includes a tray-like structure having a bottom wall and a composite rim at the perimeter of the bottom wall. The structure is made from a bendable flat member consisting of a central portion and at least two margin strips integral with the central portion. The margin strips are bent along lines coincident with respective portions of the perimeter and configured to conjointly form the composite rim. Contact overlays are mounted on respective portions of the outer side of the bottom wall of the tray-like structure. The contact bridge is simple to manufacture and has a relatively high strength.

3,818,171

MICROWAVE COOKING APPARATUS

Matthew S. Miller, Holliston, and Paul F. Harben, Milford, both of Mass., assignors to Sage Laboratories, Inc., Natick, Mass.

Filed May 26, 1972, Ser. No. 257,185
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 7 Claims



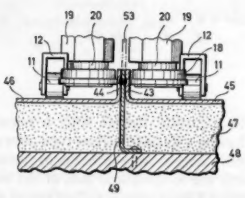
An eye-level microwave oven having a set of cooking burners disposed therebelow includes a ventilation duct extending vertically from a bottom chamber of the apparatus to the microwave oven. The duct may terminate at either the bottom or the back of the microwave oven.

3,818,172

WELDING APPARATUS FOR INTERCONNECTING FLANGES

Sven Sigvard Larsson, and Lennart Bertil Vilhelm Brange, both of Malmo, Sweden, assignors to Kockums Mekaniska Verkstads AB, Malmo, Sweden

Continuation-in-part of Ser. No. 90,337, Nov. 17, 1970, abandoned. This application Sept. 7, 1972, Ser. No. 287,207
Int. Cl. B23k 11/06
U.S. Cl. 219—82 11 Claims



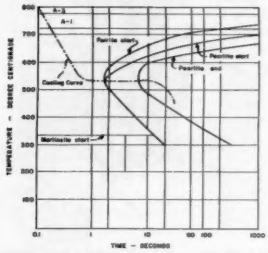
An electric welding apparatus for interconnecting abutting flanges formed by metal sheets comprises a platform arranged as a unit which is separate from an associated welding transformer. On the platform there are arranged clamping rollers for electrical welding and for driving engagement with the flanges as well as driving means operatively connected with the clamping rollers for propelling the platform along the flanges. The platform is supported by supporting members which are adjustable with respect to the platform enabling the position of the clamping members to be adjusted with respect to a transverse and a longitudinal axis of the platform.

3,818,173

JOINING LENGTHS OF WIRE END TO END FOR MANUFACTURE OF BIMETALLIC WIRE

Harry F. Zinsser, Bethel Park, and Richard E. Locke, White Oak, both of Pa., assignors to Copperweld Steel Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 161,888, July 12, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,784
Int. Cl. B23k 9/02
U.S. Cl. 219—107 9 Claims



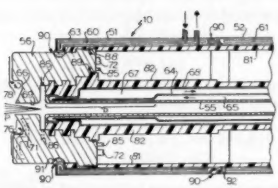
This application discloses joinder of wire lengths end to end with special usefulness in the manufacture of bimetallic wire. The disclosure includes steps of cleaning and aligning wire ends, aligning the ends and applying axial pressure, applying a welding current, removing flash and heat treating the joint.

3,818,174

LONG ARC COLUMN FORMING PLASMA GENERATOR

Salvador L. Camacho, Raleigh, N.C., assignor to Technology Application Services Corporation, Raleigh, N.C.

Filed Nov. 9, 1972, Ser. No. 305,092
Int. Cl. B23k 9/00
U.S. Cl. 219—121 P 7 Claims



In an improved long arc column forming plasma generator an aerodynamic nozzle face configuration and a novel two part insulated housing cooperate to substantially reduce so-called "double arcing" of the plasma column and damage to the plasma generator caused therefrom.

3,818,175

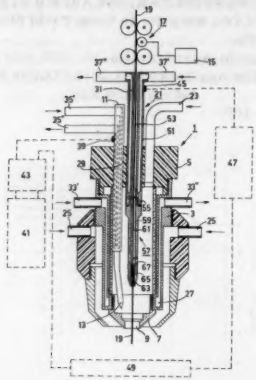
WELDING TORCH

Wilhelmus Gerardus Essers, and Gerardus Jelmorini, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

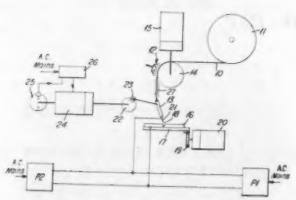
Filed Dec. 1, 1972, Ser. No. 311,418
Claims priority, application Netherlands, Dec. 15, 1971, 7117169
Int. Cl. B23k 9/00
U.S. Cl. 219—121 P 4 Claims

A welding torch comprising a housing having accommodated therein a contact tube through which welding wire is

guided and through which is transmitted current to the wire; the electrode tip part of the contact tube is manufactured from a metal such as tungsten having a high melting point and a high resistance to detrition.



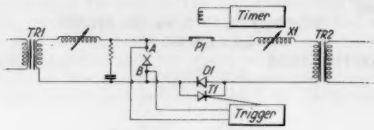
3,818,176
PULSE WELDING PROCESSES
Kenneth W. Brown, Abington, England, assignor to The Welding Institute, Cambridge, England
Filed Aug. 18, 1972, Ser. No. 281,738
Claims priority, application Great Britain, Aug. 20, 1971, 39220/71
Int. Cl. B23k *9/12*
U.S. Cl. 219—124 **8 Claims**



A metal arc welding process is described in which the arc is cyclically oscillated across and/or along the weld jointline during a weld, and in which the phase of the cyclic oscillations is correlated with the phase of a periodic metal transfer from the electrode to the workpiece such that each transference of metal takes place at a preselected instant during the cyclic movement of the arc.

3,818,177
ARC WELDING
James C. Needham, Essex, and Albert W. Carter, Cambridge, both of England, assignors to The Welding Institute, Cambridge, England
Filed Sept. 5, 1972, Ser. No. 286,055
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R **9 Claims**

A pulsed A.C. arc welding system includes a background A.C. power supply for maintaining a background arc between an electrode and a workpiece. A main A.C. power supply is intermittently connected across the arc to provide heavy current welding pulses and the main supply is temporarily isolated from the arc at the start of each electrode positive half-cycle of arc current such that the voltage from the background

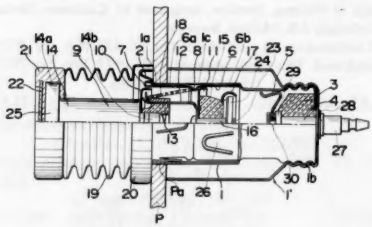


supply reaches a value sufficient to re-ignite the arc after each negative to positive current reversal.

3,818,178
GAS SHIELDED CORE WIRE ELECTRODE
Masahiro Nakabayashi, Briarcliff Manor, and Rafael Maytin Valle, Bronx, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Mar. 30, 1972, Ser. No. 239,767
Int. Cl. B23k *11/30*
U.S. Cl. 219—146 **8 Claims**

A core wire electrode for use with a shielding gas, particularly in out-of-position welding, said electrode having a core material containing magnesium and/or magnesium aluminum alloys.

3,818,179
ELECTRIC CIGARETTE LIGHTER
Toshio Mase, Nagoya, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho
Filed Sept. 25, 1973, Ser. No. 400,655
Claims priority, application Japan, Sept. 26, 1972, 47-111465
Int. Cl. F23q *7/22*
U.S. Cl. 219—267 **4 Claims**

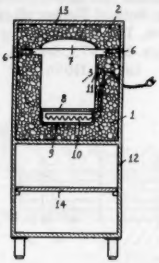


An electric cigarette lighter with a manually insertable lighter plug having a flexible bellow type cover which expands to the maximum length and contracts to the minimum length in parallel with the longitudinal axis of the electric cigarette lighter when said lighter plug is pulled out of and pressed into a tubular mounting case mounted rigidly, for instance, on the instrument panel of the automotive vehicles.

3,818,180
HEAT INSULATED CONTAINER FOR POTS
Giovanni Arosio, Via Ciro Menotti, 20035 Lissone, Milan, Italy
Filed Oct. 11, 1972, Ser. No. 296,534
Int. Cl. F27d *11/02*
U.S. Cl. 219—386 **1 Claim**

Heat insulated container for pots, adapted to be inserted into a cabinet or to be used as such in order to avoid heat dispersion of the liquid contained in said pot, wherein there is

included a block 1, consisting of heat-insulating material, provided with an upper portion 2 consisting of the same material, both showing a parallelepipedal shape, in which the block is



provided in the central portion with a recess, lined with a plastic sheet, and having a configuration like the pot it should receive, the upper portion being provided with a seat to receive the cover of the pot.

3,818,181

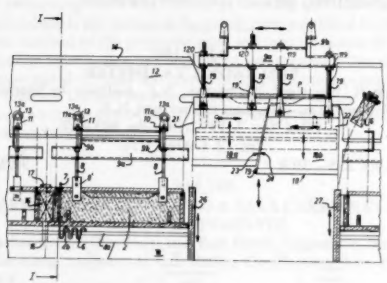
TUNNEL FURNACE, RESISTANCE TYPE

Claude Benard, L'Etang-la-Ville, France, assignor to Saint-Gobain Industries, Neuilly-sur-Siene, France

Filed Nov. 29, 1971, Ser. No. 202,937

Int. Cl. F27b 9/06

U.S. Cl. 219—388 **5 Claims**



A tunnel furnace of electrical resistance type comprising means to transport objects which are to be heated through the tunnel, means to heat the objects as they pass through the furnace comprising separate banks of resistances and means to supply each bank with current individually, means to mount each bank in operating position individually, means to remove each mounting means and its bank of resistances individually from the furnace, and means to maintain any remaining banks at operating temperature. A method of controlling the heating of glass moving through a tunnel furnace of electrical resistance type which comprises arranging the resistances in separate gangs separately supplied with current, arresting the movement of the glass when a gang of resistances is to be repaired, sealing off the portions of the tunnel adjacent the gang which is to be repaired, thereby maintaining such portions at operating temperatures, replacing the inefficient gang of resistances, removing such seals, and returning the furnace to operation.

3,818,182

DEVICE FOR SHRINKING A WRAPPER, CONSISTING OF A PLASTIC SHEETING SHRINKABLE BY HEATING, AROUND A TRANSPORT UNIT

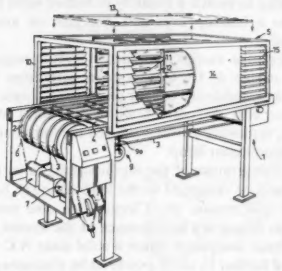
Lars Hilding Linde, Vallingby, Sweden, assignor to AB Bonnierforetagen, Stockholm, Sweden

Filed June 26, 1972, Ser. No. 266,282

Claims priority, application Sweden, July 12, 1971, 9013/71; Feb. 9, 1972, 1525/72

Int. Cl. F27b 9/06

U.S. Cl. 219—388 **3 Claims**



A device for shrinking a wrapper, consisting of a plastic sheeting shrinkable by heating, around a transport unit which can consist of a collection of goods of arbitrary type, for example small packages or boxes, magazines or the like. The device comprises electric radiation elements which act upon the wrapper on at least one side of the transport unit and which are mounted on a carrier as well as means for producing a relative movement between the transport unit and the carrier. The energy maximum of the radiation elements is at a wavelength of about 1.2 um. The major portion of the radiation lies within the wavelength range 0.4–4.0 μm, preferably 0.7–2.0 μm. The elements are mounted in front of essentially flat reflectors. The elements with their accompanying reflectors are arranged to form a tunnel arch over the transport unit whose plastic wrapper is being heated for shrinking.

3,818,183

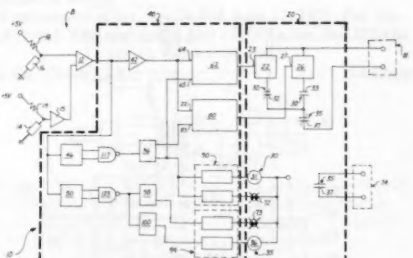
ELECTRONIC TEMPERATURE CONTROL SYSTEM

J. Gilbert Masson, 4117 Sacramento Dr., Greensboro, N.C. 27406

Filed May 9, 1973, Ser. No. 358,819

Int. Cl. H05b 1/02

U.S. Cl. 219—497 **8 Claims**



A Resistance Temperature Detector (RTD) having a predictable positive temperature coefficient produces a D.C. voltage corresponding to the temperature of a medium. A variable resistor that can be adjusted to some value to match

the value of the RTD at predetermined temperatures, in bridge relationship with the RTD, provides a reference voltage for comparison with the voltage produced by the RTD. The output of this bridge is fed to a differential amplifier which in turn feeds three circuits:

1. a high gain D.C. amplifier that actuates through logic circuits the triggering circuit of a solid state A.C. switch controlling power to the medium and regulating the temperature thereof with respect to the reference temperature;
2. a temperature variation detector circuit responsive to plus or minus 2° C. temperature variations from the reference temperature to energize through logic circuits a power relay to switch a possibly defective solid state A.C. switch to a backup unit and energize an annunciator lamp; and
3. a temperature variation detector circuit responsive to plus or minus 4° C. temperature variations from the reference temperature to energize through logic circuits a relay that will disconnect all of the solid state A.C. switches, removing power from the medium and energizing an annunciator lamp.

When the temperature of the medium falls to within the 2° limit, power will be reapplied to the load although both alarm annunciators will remain on. Circuits are also provided to maintain radio frequency interference at the lowest level and to minimize heat dissipation when a solid state A.C. switch is turned on and further to allow power to be disconnected from the circuit for purposes of repair without arcking and/or shock.

3,818,184

THERMAL STABILIZATION DEVICE USING A TEMPERATURE SENSING DEVICE AND AN ELECTRICAL HEATING MEANS ESPECIALLY FOR FIELD PROBES FOR MEASURING MAGNETIC FIELD STRENGTH IN SECTORAL FIELD MASS SPECTROMETERS

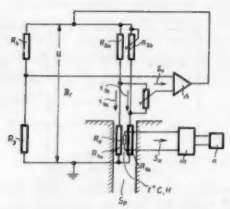
Karleugen Habfast, and Gerhard Heinen, both of Bremen, Germany, assignors to Varian Mat Gesellschaft mit beschrankter Haftung, Breman, Germany

Filed Feb. 16, 1972, Ser. No. 226,663

Claims priority, application Germany, Feb. 20, 1971, 2108287

Int. Cl. H05b *1/02*

U.S. Cl. 219—504 **8 Claims**



A device for thermal stabilization of a field probe using a temperature sensing device and an electrical heating element disposed in the gap of the magnet of a sectoral field mass spectrometer. The probe is disposed between bipartite NTC (negative temperature coefficient) resistance means which are coupled in a bridge circuit.

3,818,185

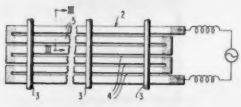
HEAT FUSION-BONDING APPARATUS FOR ELECTROPHOTOGRAPHY

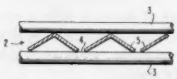
Masaharu Aoki, Tokyo; Hiromichi Odajima, Yokohama; Michi Segawa; Ken Ueda, both of Tokyo; Yasushi Eukase, Yokohama; Yasuhiko Terajima; Hidekazu Yumoto, and Takahiko Mizobe, both of Tokyo, all of Japan, assignors to Fuji Xerox Co. Ltd., Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,152

Int. Cl. H05b *3/10*

U.S. Cl. 219—552 **1 Claim**





A heat fusion-bonding apparatus for electrophotography comprising at least one heating element comprising a thin metal sheet housed in an associated container and loosely supported therein by support members each of which is substantially circularly-shaped in section and made of a heat resistant and electrically insulating material so that the heating element can move freely between the support members.

3,818,186

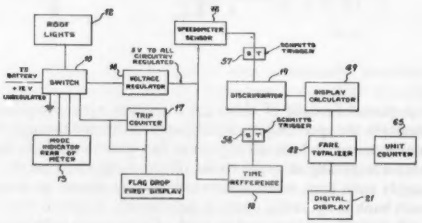
ELECTRONIC TAXIMETER

Mark H. Harwood, Livingston, N.J., assignor to Machining Methods Industries, East Rutherford, N.J.

Filed Nov. 3, 1972, Ser. No. 303,467

Int. Cl. G07b *13/10*

U.S. Cl. 235—30 R **9 Claims**

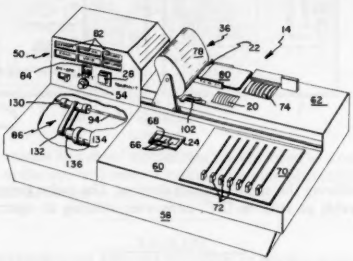


An electronic taximeter with a simplified integrated circuitry having a sensor for computing distance travel charge, a constant frequency oscillator for computing waiting time charge, a counting means, control means in which the higher revenue charge takes precedence in being transmitted to the counting means, and an illuminated digital display for indicating the integrated time-distance charge in terms of monetary units.

3,818,187
CREDIT VERIFICATION SYSTEM AND TERMINAL THEREFOR

Charles Michael Lovendusky, Enola, and Raymond Vincent Pass, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 8, 1972, Ser. No. 224,503
Int. Cl. G06k 5/00, 7/08
U.S. Cl. 235—61.7 B 9 Claims

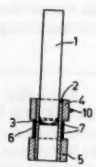


A system for verifying the credit status of individual consumers is disclosed, along with a terminal structure for facilitating point of sale credit checks. The system includes a central processing unit which is coupled through suitable communication channels to a plurality of remotely located terminals. Each terminal includes an apparatus for holding a credit card and for reading information imprinted thereon and a printing mechanism for printing identification and purchase information on an appropriate business form. The terminal also includes a price register in which the amount of a particular proposed credit sale is set. A logic network is provided to lock the printer and the price register while identifying information contained on the credit card is transmitted to the central processing unit. The central processing unit then determines whether the holder of the credit card is entitled to credit in the amount of the proposed sale, and then transmits the appropriate information to the point of sale terminal. The information signal unlocks the printer, thus permitting printing of the business form. Variations of the basic device are also disclosed, such as a device for preventing the return of fraudulent or expired credit cards.

3,818,188
DEVICE FOR POSITIONING A DATA CARRIER IN A READING APPARATUS

Gunther Hertel, Hamburg, and Ralf Ehrke, Eppenhain, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1972, Ser. No. 250,346
Claims priority, application Germany, Oct. 26, 1971, 2153214
Int. Cl. G06j 19/04
U.S. Cl. 235—61.11 R 9 Claims

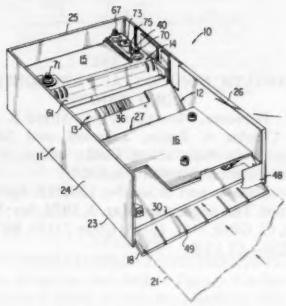


A device for positioning a data carrier in a reading apparatus, the data carrier being attached, for example, to a test tube by means of a coupling element. The coupling element can be positioned in a holder in the form of a sleeve provided with inner guides.

3,818,189
DATA CARD READER

Robert L. Stone, Portland, and David C. Schilke, Middleton, both of Conn., assignors to Raymond Engineering, Inc., Middletown, Conn.

Filed Aug. 1, 1972, Ser. No. 277,052
Int. Cl. G06k 13/06, 7/10; G08c 9/06
U.S. Cl. 235—61.11 R 17 Claims

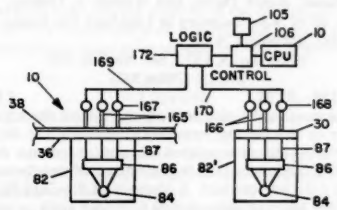


The invention herein generally relates to a data card reader. The data cards to be read have a data format arranged in columns and rows with the initial two columns devoted to a predetermined error check data pattern to be read for determining if the card reader is functioning correctly. A row of timing marks is provided with one timing mark for each column of data, and the leading edge of each timing mark is positioning midway with respect to the data bits in the associated column. The data card further includes a black servo stripe printed parallel to the rows of data along one edge of the card, and two additional black stripes, one at the leading and one at the trailing edges of the card wherein a transition from black to white at the termination of the leading edge stripe activates a data read capability, and a transition from white to black at the trailing edge stripe subsequently deactivates the data read capability.

3,818,190
AUTHENTICATION OF ACCESS TO INFORMATION RECORDS

Daniel Silverman, 5969 S. Birmingham St., Tulsa, Okla. 74105, and Everett A. Johnson, 15 S. Prospect Ave., Park Ridge, Ill. 60068

Continuation of Ser. No. 74,066, Sept. 21, 1970, Pat. No. 3,677,465. This application July 17, 1972, Ser. No. 272,686
Int. Cl. G06k 5/00, 19/08
U.S. Cl. 235—61.7 R 14 Claims



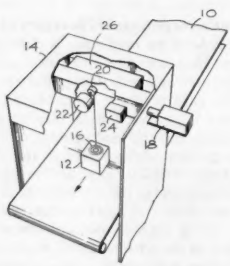
The invention provides an access control system for selectively granting access on presentation and authentication of a

control card means, the control card means comprising a web means with machine readable indicia carried thereby and having unique coded micro space pattern means. The control card authentication means described includes means to read the indicia and a bank of authenticating master patternsns, with means responsive to the reading of the indicia to select the appropriate master pattern from the bank; and means being disclosed for comparison of the coded pattern with the authentication pattern selected from the bank of master patterns. When the compared patterns correspond, access is authorized which may include means for delivery of an item carrying a coded pattern. The coded patterns may comprise an array of redundant coded patterns, an array of microperforations, etc.

3,818,191
AUTOMATIC NON-CONTACT RECOGNITION OF CODED INSIGNIA

Claude L. Fennema, Mountain View; Alfred E. Brain, Santa Cruz; Charles A. Rosen, Atherton, and John M. Yarborough, Palo Alto, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Continuation-in-part of Ser. No. 130,213, April 1, 1971, abandoned. This application Mar. 3, 1972, Ser. No. 231,553
Int. Cl. G06k *7/14, 19/06;* **G01n** *21/30;* **B07c** *5/34*
U.S. Cl. 235—61.11 E **6 Claims**



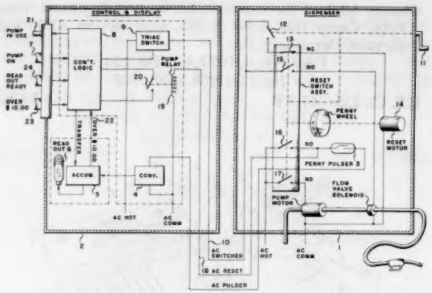
A system is provided for optically scanning a remotely located encoded label on a package, error detecting, verifying and decoding the same, regardless of the orientation of said package.

3,818,192
REMOTE CONTROL AND DISPLAY FOR A LIQUID DISPENSING SYSTEM

Elmer C. Anderson, Colonia; John Dow, Jr., Atlantic; William B. Gutman, Scotch Plains, and William A. Oetting, Green Brook, all of N.J., assignors to Lockheed Electronics Company, Inc., Plainfield, N.J.

Filed Nov. 9, 1972, Ser. No. 305,109
Int. Cl. G06m *3/08*
U.S. Cl. 235—92 FL **5 Claims**

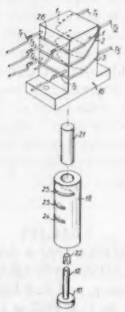
An electronic calculator and control system for a gasoline dispenser or the like for remotely controlling the dispenser and displaying the accumulated sale and/or volume. A pulse generator is actuated as the fuel is dispensed and the count is stored in a decade counter. A plurality of flip-flops (latches) and control logic provide control functions such as applying power to the dispenser, lighting proper indicators on a control panel, transferring the accumulated count to readout devices, preserving a count for at least one readout, resetting the counters, turning off the dispenser in the event the sale exceeds a certain amount, and an override if it is desirable to exceed this amount. Provision is made for operating a plurality of dispensers utilizing the same readout devices. The pulse generator is preferably an A.C. to D.C. converter utilizing an optical coupler.



3,818,193
ROAD-USAGE METER

Peter Charles Saunders, Newick near Lewes; Dennis William Revell, London, and Terence James Clarke, Swanley, all of England, assignors to National Research Development Corporation, London, England

Filed Nov. 20, 1972, Ser. No. 307,832
Claims priority, application Great Britain, Nov. 26, 1971, 5514/71
Int. Cl. G08b *13/14*
U.S. Cl. 235—92 FP **7 Claims**



A metering device with anti-misuse safeguards, primarily for use as a road-usage meter on a vehicle. The meter will not record until it has been engaged with the anti-misuse device; engagement breaks an electrical link within the meter. Subsequent disengagement of meter and device breaks a second electrical link; this breakage indicates that the meter has been interfered with. The anti-misuse device may be fixed to the vehicle and constitute the mounting for the meter upon the vehicle.

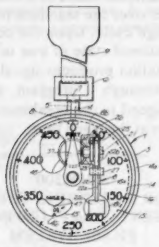
3,818,194
PEDOMETER TOY

Carl B. Biro, 126 Linn Ave., Yonkers, N.Y. 10705

Filed May 21, 1973, Ser. No. 362,265
Int. Cl. G01c *22/00*
U.S. Cl. 235—105 **12 Claims**

A pedometer toy comprising a support for means for indicating the number of feet and fractions of a mile traversed together with the drive mechanism for the indicator means.

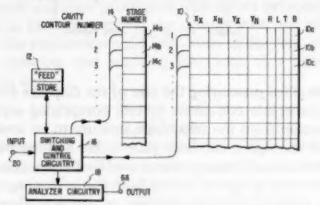
The drive mechanism comprises a pendulum, a ratchet wheel and pawl and a gear train. The support and its associated indicator means and drive mechanism are enclosed in a case affixable to the wearer's body. Finally, means are provided to set the indicator means to any desired reading.



3,818,195
METHOD AND APPARATUS FOR CONTROLLING PLACEMENT OF SPLIT DIE CAVITIES

Richard C. Levine, Plainfield, N.J., assignor to Diecomp Inc., South Plainfield, N.J.

Filed Sept. 8, 1972, Ser. No. 287,262
Int. Cl. B22d *45/00;* **G06g** *7/48;* **G06f** *15/20*
U.S. Cl. 235—150 **16 Claims**



Apparatus for controlling the placement of split die cavities in a progressive die where each cavity is described in terms of a group of contour coordinate signals which define predetermined coordinates of the contour of the cavity and split direction signals which define faces of the cavity contour from which splits thereof radiate, the apparatus comprising:

first register means for storing a first group of contour coordinate signals and split direction signals corresponding to a first split die cavity;

second register means for storing a second group of contour coordinate signals and split direction signals corresponding to a second split die cavity;

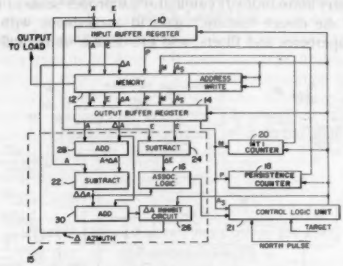
analyzer means responsive to first and second contour coordinate signals for determining whether the split die cavity corresponding to a first signal group is inappropriately placed with respect to the split die cavity corresponding to a second signal group because of unmatched split conditions.

3,818,196
SURVEILLANCE COMPUTER

Richard W. Currie, and Teddy J. Peacher, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1972, Ser. No. 317,321
Int. Cl. G06f *15/50;* **G01s** *7/46*
U.S. Cl. 235—150.27 **2 Claims**

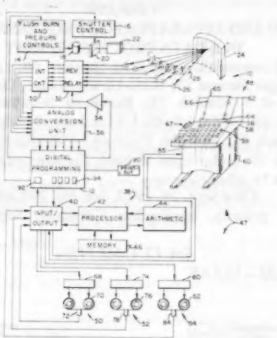
A surveillance computer maintains track simultaneously on a number of targets in the field of view of a surveillance device for enhancing initial detection and observation of aircraft targets. The computer is responsive to outputs from a surveillance device, such as an infrared scanning system. These outputs are repetitive electronic signals indicating that a target is present and provide the target's azimuth and elevation coordinates in digital format.



3,818,197
COMPUTERIZED SPECTROMETER SYSTEM

Adrian Piccolo, Brighton, and Arthur Turner, Carlisle, both of Mass., assignors to Baird-Atomic Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 55,429, July 16, 1970. This application June 2, 1972, Ser. No. 259,152
Int. Cl. G06f *15/06, 15/20;* **G01j** *3/36*
U.S. Cl. 235—151.3 **9 Claims**



A system for calculating, analyzing and presenting a chemical analysis of a specimen is comprised of a spectrometer, a converter-control, a computer, programmers, a keyboard, and a display. The format of the presented data the calculation of the specimen data and the analysis of the calculated data are specified by a combination of interrogating signals from the programmers and responsive signals from the keyboard.

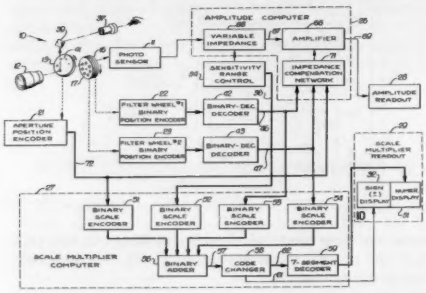
3,818,198
AUTOMATIC DIRECT-READING PHOTOMETER APPARATUS AND METHOD

Richard A. Walker, Woodland Hills, and Robert W. Maloy, Downey, both of Calif., assignors to Kollmorgen Corporation, Holyoke, Mass.

Filed Aug. 31, 1972, Ser. No. 285,239
Int. Cl. G06f *15/20;* **G01j** *1/00*
U.S. Cl. 235—151.3 **11 Claims**

A photometer system of the type having a photoelectric sensor receiving light through selectable different-sized apertures and selectable different density optical filters is provided with

electronic circuitry including a numerical read-out means for automatically compensating the photo-sensor output in accordance with selected aperture and filter settings and for providing a direct numerical reading of the measured light. The circuitry automatically calculates the proper scale or multiplier of the direct reading, again in accordance with the selected apertures and filters, and provides a numerical display of such scale multiplier. Additionally, a gain control for changing the sensitivity of the photoelectric sensor is provided with an output indicative of the gain setting. This gain setting information is electronically fed to the computer along with the aperture and filter information for automatically computing and displaying the correct scale or multiplier factor from all of these independent variables.



3,818,199
METHOD AND APPARATUS FOR PROCESSING ERRORS IN A DATA PROCESSING UNIT

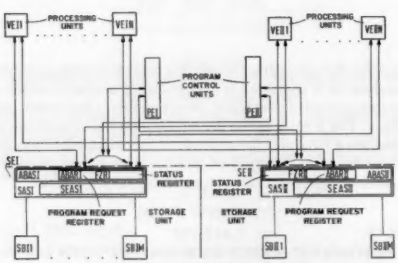
Gunter Grossmann, Paul-Klee-Strasse 40; Josef Huber, Plattlinger Strasse 57; Hans-Ulrich Moder, Littmannstrasse 3, all of 8 Munich 71; Bernhard Schaffer, Kemptener Strasse 63, 8 Munich 49; Ulrich Lenz, Hindelangstrasse 8, 8 Munich 71; Joachim Petersen, Aidenbachstrasse 103, 8 Munich 70, and Jurgen Rabold, Forstenrieder-Allee 167, 8 Munich 71, all of Germany

Filed Sept. 29, 1972, Ser. No. 293,498

Claims priority, application Germany, Sept. 30, 1971, 2148981

Int. Cl. G06f *11/04*

U.S. Cl. 235—153 AK **11 Claims**



A method and apparatus for controlling the functional states of system units of a modularly constructed program controlled data processing system are described. The system units are connected through standard interface connections. The system stores all the program required for its operation in a central storage. Defective system units are placed in a testing state and isolated from the rest of the system, which can remain operative. The functional states of the individual system units can be changed manually and/or controlled automatically by a program. The individual system units indicate their respective functional states to a central station comprising a digital register over the standard interface connections, and through a storage cycle. Upon the occurrence of a defective change in functional state of one or more of the system units, the central station produces signals which bring about, either directly or through a program, a response from the processing unit assigned to the combination of the changes in the functional states at the given time.

3,818,200
METHOD FOR MEASURING THE SIZE OF THE DISPERSE ELEMENTS IN A FLUID IMMISCIBLE TWO-PHASE SYSTEM

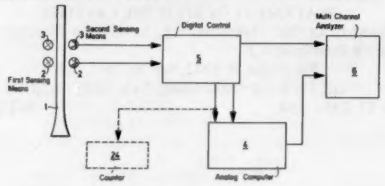
Theo Pilhofer, Georgerstr. 105, 8 Munich 13, Germany

Filed Jan. 2, 1973, Ser. No. 320,664

Claims priority, application Germany, Jan. 13, 1972, 2201507

Int. Cl. G06g *7/57*; G01f *1/00*

U.S. Cl. 235—151.3 **15 Claims**



A method for measuring the size of the disperse elements in a fluid immiscible two-phase system comprising separating a partial stream from the two-phase mixture to be investigated, passing it through a capillary past a first sensing means and then past a second sensing means, said first and second sensing means generating signals lasting from the beginning to the end of each plug or discrete portion of laminar flow flowing through the capillary, the velocity of each plug being determined by the distance between said first and second sensing means and the time lag between said sensing signals. In a preferred embodiment, the actual cross section of the plugs is measured by the plug velocity with the aid of constants specific to the system and finally, the volume of each plug is determined from its cross section and its length, the latter being calculated from its velocity and from the duration of one of said sensing signals. Also, an apparatus for performing the method comprising a transparent capillary having a funnel shaped enlargement at its end, and being connected with a circumferential support means, a tube having inserted into one end thereof said support means, and having arranged therein a detection block containing said sensing means, a spacing means and a cable duct.

3,818,201
METHOD AND SYSTEM ARRANGEMENT FOR MONITORING AND INDICATING PULSE TIMING FUNCTIONS WITH MEASURABLE TIME REFERENCE

Reinhard Hartwich, Boeblingen; Gerhard Kundel, Karlsruhe; Hans H. Lampe, Oberjesingen, and Peter Rudolph, Schoenaich, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,275

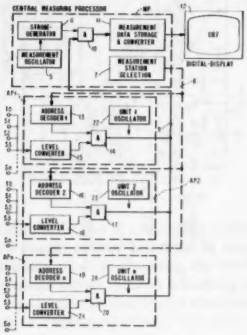
Claims priority, application Germany, Dec. 17, 1971, 2162837

Int. Cl. G06f *11/00*

U.S. Cl. 235—151.31 **12 Claims**

A multi-channel pulse monitoring and indicating system uses a programmed digital computer system to control sam-

pling and display, in time measurable context, of multiple pulse timing functions of peripheral devices and/or service processors. The sampled functions are stored electronically and also visibly presented on a retentive CRT display unit associated with the computer system. A keyboard associated with the computer permits a service operator to interact with



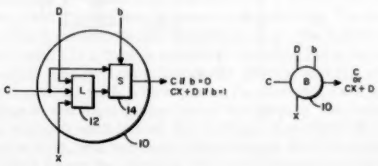
the program and select the service processor which is to be monitored and the time measurement parameters of the system; with selection prompting indications presented by the program to the operator via the display unit. An example is given of the time-referenced indication of feeding, punching, reading, printing and stacking functions of a record card processing unit.

3,818,202

BINARY BYPASSABLE ARITHMETIC LINEAR MODULE

James T. Ellison, Minneapolis, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,833
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **2 Claims**



A bypassable module for performing an arithmetic linear function is disclosed. The module utilizes well-known binary elements to construct a novel combination thereof that given three multibit binary input signals C, D, X and the single bit binary input signal b generates the alternative output functions

$$C \text{ if } b=0$$

or

$$CX+D \text{ if } b=1.$$

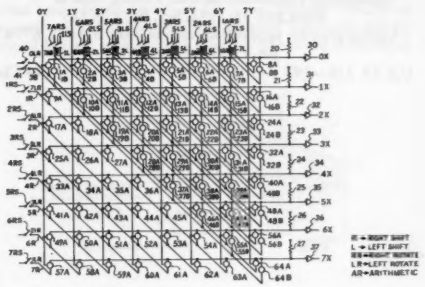
Additionally, disclosed is a linear tree incorporating a plurality of such modules for generating a polynomial of a degree that is determined by the number of modules not bypassed.

3,818,203

MATRIX SHIFTER

Andrew A. Perlowski, Plano, Tex.; Robert H. Wallace, Clearwater, Fla., and Robert L. Magers, Tulsa, Okla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 27, 1973, Ser. No. 391,610
Int. Cl. G06f 7/00
U.S. Cl. 235—164 **10 Claims**



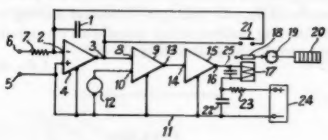
The disclosure describes a matrix shifter comprising right and left shift conductors which operate switches controlling the flow of information from input conductors to output conductors. The switches are arranged in the form of a matrix so that logical, arithmetic and rotational multibit shifting can be achieved with a single pass by energizing at most two control shift conductors at a time.

3,818,204

VOLTAGE INTEGRATING APPARATUS

Roger Hadida, Paris, France, assignor to Societe Ben Societe Anonyme, Marseille, France

Filed Jan. 13, 1972, Ser. No. 217,609
Claims priority, application France, Jan. 15, 1971, 71.1264
Int. Cl. G06g 7/18
U.S. Cl. 235—183 **9 Claims**



Apparatus including an integration capacitor for integrating a given voltage relative to time, characterized by the provision of electromechanical means for simultaneously discharging said integration capacitor means when the charge voltage reaches a given value relative to a reference voltage, and for stepping a counter one step in a given direction. According to one modification of the invention, the voltage to be integrated comprises a direct-current voltage of reversible polarity, and the counter means is steppable in opposite directions, said electromechanical means being operable to compare said given voltage with a pair of reference voltages of opposite polarity for operating the appropriate one of a pair of coil and

core means to simultaneously discharge said integration capacitor means and to step the counter means one unit in the appropriate direction.

3,818,205

COMPUTATIONAL CIRCUIT FOR MATHEMATICAL OR PHYSICAL VALUES IN ELECTRICAL FORM

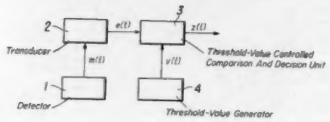
Wolfgang Wehrmann, Vienna, Austria, assignor to Norma Masstechnik Gesellschaft m.b.h., Vienna, Austria

Filed July 31, 1972, Ser. No. 276,315

Claims priority, application Austria, Aug. 3, 1971, 6778/71

Int. Cl. G06g 7/16, 7/20

U.S. Cl. 235—193 **44 Claims**



Circuit arrangements for carrying out mathematical operations upon electrical signals by means of pulse sequences, the frequencies of which are proportional to desired computational results. Threshold-controlled comparison and decision units are provided for comparing the physical or electrical magitudes with output signals generated by associated threshold signal generators. The threshold-controlled comparison and decision units produce at their outputs logic 0 or 1 decisions. The threshold signal generators have output signals of predetermined relative amplitude frequencies. The outputs of the comparison and decision units are coupled to the inputs of a computationally adaptive configuration network, which includes a storage capability. The computationally adaptive configuration network transforms or configures the logic 0 or 1 sequences of the comparison and decision units to a resulting 0 or 1 sequence forming the output of the configuration network, and the relative pulse or pulse duration frequency of which is proportional to the computational result. The computational result output of the computationally adaptive configuration network can be connected to an output unit for displaying the computational results in analogue or digital form. In various embodiments of the invention computationally adaptive configuration networks are disclosed for performing multiplications, divisions, taking of roots and placing exponentials, performing mathematical transforms on signals, and performing addition and subtraction.

3,818,206

MARK-SPACE MODULATOR FOR A TIME-DIVISION MULTIPLIER

Julius Brunner, Nurnberg; Manfred Schwendtner, Schwarzenbruck, and Gunter Steinmuller, Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

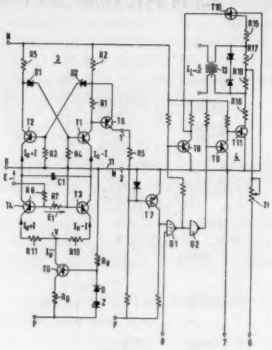
Filed Feb. 8, 1973, Ser. No. 330,618

Claims priority, application Germany, Feb. 10, 1972, 2206223

Int. Cl. G06g 7/16; G01r 21/00

U.S. Cl. 235—194 **5 Claims**

An improved mark-space modulator for an electronic time division multiplier in which an astable multivibrator which is providing the timed output pulses is controlled by two current source transistors having their bases connected via a resistor, with the base of one additionally connected to ground and the base of the other to the voltage to be quantitized. A current source provides a fixed current to the two transistors which is



split according to the voltages at their bases such as to cause the multivibrator to output pulses having a mark-space ratio $[(t_s -)/(t_2 t -)]$ which is proportional to the input voltage.

3,818,207

APPARATUS FOR CONVERTING A MEASURING VOLTAGE INTO VALUES NOT PROPORTIONAL THERETO

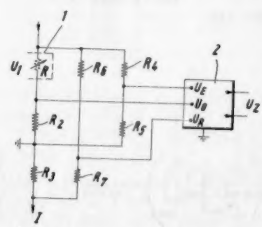
Gero Zschimmer, P.O. Box 360, 1 Berlin 41, Germany

Filed Aug. 28, 1972, Ser. No. 284,052

Claims priority, application Germany, Mar. 21, 1972, 2214430

Int. Cl. G06q 7/26

U.S. Cl. 235—197 **10 Claims**

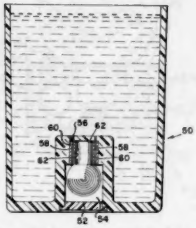


The invention relates to an apparatus for converting a measuring voltage into a second voltage which is not proportional to the measuring voltage. The apparatus comprises a first linear circuit element at the measuring voltage source and a network of additional linear circuit elements connected thereto. The network may be connected to earth. A quotient measuring means has a numerator input and a denominator input and also has a zero input variable with respect to a fixed reference point and which serves as a variable reference point for the numerator and denominator input voltages. The linear circuit elements may be resistors. One or more diodes may be incorporated into the network. If the measuring voltage is alternating, then an inductor or capacitor may be included in the network.

3,818,208
ELECTRICAL ELEMENT IN A BEVERAGE CONTAINER

Peter Kahl, 10 Maple St., South Hamilton, Mass. 01982

Filed Sept. 15, 1972, Ser. No. 289,300
Int. Cl. F21v 33/00
U.S. Cl. 240—6.4 G 8 Claims

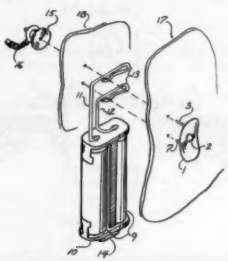


An electrical element for use in a beverage container comprises an enclosed energy source activated in response to a temperature differential in a gas chamber, the energy source actuating an amusement device such as a flashing light or the like. The housing for the energy source and amusement device can be, for example, a translucent plastic "ice cube."

3,818,209
ELECTRICALLY ILLUMINATED JEWELRY

Alexander Roth, 53 Clifford Rd., Sudbury, Mass. 01776

Filed Feb. 12, 1973, Ser. No. 331,533
Int. Cl. F21v 33/00, 21/00
U.S. Cl. 240—6.4 W 2 Claims



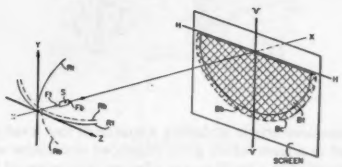
The present invention is an improvement in electrically illuminated jewelry which may be worn on the clothing. The basic form of the invention consists of three parts (1) the lighted ornament itself, (2) a battery container including batteries and (3) a catch. The ornament houses the lamp(s) and has at its rear two pointed studs which pierce the clothing, each stud providing an electrical connection to the lamp(s). The battery case is normally used behind the clothing upon which the ornament is worn, and has leads which engage the two pointed studs which pierce the clothing. The catch engages one of the pointed studs thereby locking together the battery case, the ornament and the section of clothing upon which the ornament is used.

3,818,210
VEHICULAR ROAD-LIGHTING SYSTEM HAVING A HEADLAMP WITH A DUAL-SEGMENT REFLECTOR

Elam Pitkjaan, Cedar Grove, N.J., assignor to Westinghouse Electric Corporation, Pittsburg, Pa.

Division of Ser. No. 232,057, March 6, 1972, which is a division of Ser. No. 77,092, Oct. 1, 1970, Pat. No. 3,688,149.
This application Jan. 17, 1973, Ser. No. 324,474
Int. Cl. B60q 1/00, 3/00
U.S. Cl. 240—7.1 A 10 Claims

A vehicle headlamp having a single concentrated light source and a unitary concave reflector which is contoured to provide a pair of hemiparabolic reflector segments that have axially spaced focal points and merge with one another along a protruding step that extends horizontally along the inner surface of the reflector. The light source extends between and is so oriented relative to the focal points of the reflector segments that the light beams from the segments are superimposed and thus form a single composite beam of intense light that has a sharp horizontal cutoff. A shield mounted in front of the light source intercepts direct rays from the source and prevents glare. The lamp is preferably of "sealed beam" construction and contains a C6 or C8 type filament. Axially or transversely mounted halogen-incandescent lamps can also be employed as light sources. The lens component of the lamp is



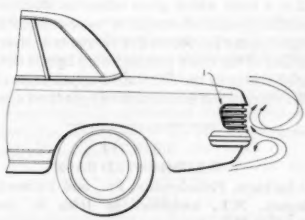
preferably provided with vertically extending flutes to provide additional control of the beam pattern or, alternatively, can be made of clear glass. In the case of a PAR 36 type lamp having a C8 filament or an axially-mounted halogen-incandescent lamp, a domed lens is used to accommodate the shield and mount structure.

Also disclosed are vehicular roadway-lighting systems wherein one of the aforesaid segmented reflector headlamps is combined with three conventional headlamps to provide low-beam, turnpike-beam, and high-beam modes of illumination — or a pair of segmented-reflector lamps are used as an auxiliary lighting system which supplements the illumination of a conventional headlamp system during passing or when driving in a fog or under similar hazardous driving conditions.

3,818,211
COVER PANE FOR REAR LIGHTS OF VEHICLES, ESPECIALLY OF MOTOR VEHICLES

Karl Wilfert, Gerlingen-Waldstadt, and Hans Gotz, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterlurkhein, Germany

Filed June 30, 1972, Ser. No. 268,079
Claims priority, application Germany, July 2, 1971, 2133076
Int. Cl. B60g 1/30
U.S. Cl. 240—8.3 13 Claims

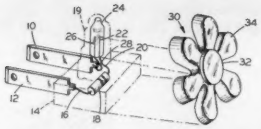


A cover pane for rear lights of vehicles, especially of motor vehicles, in which the surface of the cover pane is approximately meandershaped as viewed in vertical cross section to reduce the effect of soiling.

3,818,212
DECORATIVE GUIDE LIGHT

Celia A. Rochford, Kingston, and Paul E. Rochford, East Greenwich, both of R.I., assignors to General Electric Company, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,318
Int. Cl. F21s *1/00*
U.S. Cl. 240—10 R **5 Claims**

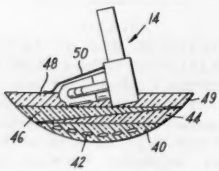


A decorative article including a source of low level light is provided in a form which gives enhanced decorative effects. More specifically a small source of more concentrated light is provided with decorative elements so that a spreading and softening of the more concentrated light is achieved along with a heightening of the decorative appearance of the article due to distribution and emanation of light from the decorative portions.

3,818,213
CAST RESIN GLOW LAMP PRODUCT

Paul E. Rochford, East Greenwich, and Celia A. Rochford, Kingston, both of R.I., assignors to General electric Company, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,060
Int. Cl. F21s *1/00*
U.S. Cl. 240—10 R **7 Claims**



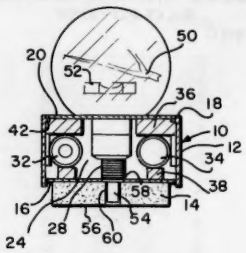
A decorative article including a source of low level light is provided in a form which gives enhanced decorative effects. More specifically a small source of more concentrated light is incorporated with cast decorative elements so that a spreading and softening of the more concentrated light is achieved along with a heightening of the decorative appearance of the article due to distribution and emanation of light from cast portions.

3,818,214
ILLUMINATED BASE

John A. Jackson, Philadelphia, Pa., and Richard M. Fegan, Flemington, N.J., assignors to John A. Jackson Inc., Philadelphia, Pa.

Filed Dec. 26, 1972, Ser. No. 318,685
Int. Cl. F21v *33/00*
U.S. Cl. 240—10 R **5 Claims**

An illuminated base comprising an enclosing cabinet which contains an electrical circuit, a lamp and a push type switch to control the lamp. A reflecting cover upwardly closes the cabinet and is provided with an opening therein to permit light rays to shine upwardly therethrough. The switch is operable

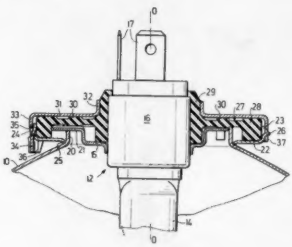


through a foam rubber base pad which can be readily compressed against a stationary surface when it is desired to activate the lamp.

3,818,215
SEALED-BEAM HEADLIGHT

Joachim Schmidt, Ditzingen; Ernst Merkl, and Ulrich Zillgitt, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 13, 1973, Ser. No. 332,169
Claims priority, application Germany, Feb. 25, 1972, 2208886; Sept. 21, 1972, 2246361
Int. Cl. F21m
U.S. Cl. 240—41 R **20 Claims**



A reflector of a sealed-beam headlight has a tubular neck provided with an outer opening encircled by a retaining ring which is fixed to the neck. A bulb extends through the outer open end into the reflector having a socket located in the neck and in turn encircled by a radially extending annular mounting flange. A cup-shaped member surrounds the outer open end and has engaging portions in snug-fitted engagement with the retaining ring, and at least one sealing ring is sealingly compressed between the cup-shaped member and one or both of the mounting flange and the socket.

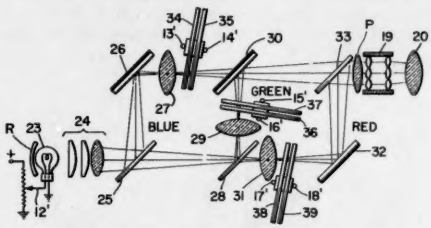
3,818,216
MANUALLY OPERATED LAMPHOUSE

Philippe M. Larraburu, 12005 Albers, North Hollywood, Calif. 91607

Filed Mar. 14, 1973, Ser. No. 341,155
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 **5 Claims**

A manually operated lamphouse for providing light color control and intensity for improving, the quality of negative films in printing, for example, includes a broad spectrum tungsten lamp the intensity of which is manually controllable. Dichroic mirrors are utilized to separate the broad spectrum of the lamp into first, second, and third colors. Individual at-

tenuation controls in turn operable from the exterior of the lamp housing enable the intensity of the individual colors to be controlled. The colors are then recombined and passed out a projection axis through a lenticular lens system to integrate



the recombined beam to provide a uniform output beam. The color content and intensity of the output beam can thus be manually controlled in accord with various operations to be performed such as the printing of film.

3,818,217

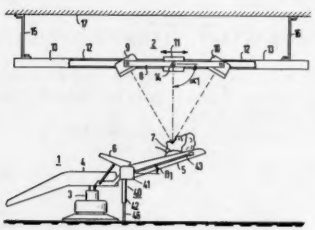
DEVICE FOR ADJUSTING DENTAL ILLUMINATION

Walter Hetz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Continuation-in-part of Ser. No. 16,365, March 4, 1970, abandoned. This application May 8, 1972, Ser. No. 251,090

Int. Cl. A61b *1/06*

U.S. Cl. 240—41.15 **9 Claims**



A device is used for adjusting dental lights, wherein the light, with present focusing, must be placed according to location of and distance from a variable treating place with the use of an electric steering device. The invention is particularly characterized in that a device is provided at the location of the treating place, for example, a dental treating chair, which copies the changes in position and transmits them to a steering device.

3,818,218

LANTERN

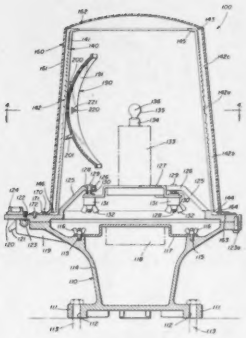
Sidney A. Heenan, Park Ridge, Ill.; Joseph A. Ciccolella, Summit, N.J.; Norbert Majewski, Elk Groove Village, and Anthony J. Montalbano, Des Plaines, both of Ill., assignors to Amerace Esna Corporation, Union, N.J.

Division of Ser. No. 185,245, Sept. 30, 1971. This application Oct. 25, 1972, Ser. No. 300,757

Int. Cl. F21v *13/04, 7/00*

U.S. Cl. 240—41.3 **27 Claims**

A lantern includes a device for condensing light rays in at least one direction and a part-spherical, cube-corner reflector having radially directed cube axes. Light rays from a light source disposed at the focal point of the condensing device and approximately at the center of curvature of the reflector impinge on the reflector and are returned back to the source.



The device condenses in at least one direction both the light emanating directly from the source and the light retrodirectively returned to the source.

3,818,219

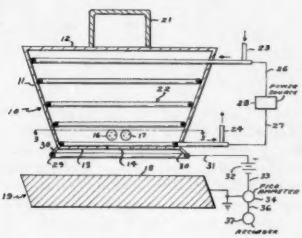
NON-DESTRUCTIVE TESTING OF METAL STRUCTURES BY MEASURING EXO-ELECTRON EMISSION

Stuart A. Hoenig, and William E. Ott, both of Tucson, Ariz., assignors to the United States of America as represented by the Secretary of the Air Force

Filed Apr. 18, 1972, Ser. No. 245,150

Int. Cl. G01n *23/00*

U.S. Cl. 250—49.5 R **11 Claims**



A method for the non-destructive testing of a metal structure is provided that comprises heating the structure in the presence of ultraviolet radiation to a temperature sufficient to cause exo-electron emission from the structure; continuously measuring an electrical current resulting from exo-electrons flowing to a metal collector maintained at a positive potential, and determining the magnitude of the electrical current as a measure of fatigue damage.

3,818,220

VARIABLE DEPTH LAMINAGRAPHY

Albert G. Richards, 395 Rock Creek Dr., Ann Arbor, Mich.

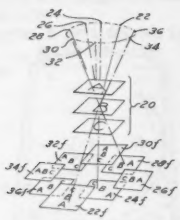
Filed Nov. 3, 1971, Ser. No. 195,346

Int. Cl. G03b *41/16*

U.S. Cl. 250—61.5 **7 Claims**

A method and apparatus for obtaining laminal detail within a three-dimensional object utilizing circular laminagraphy,

that is, a series of exposures to penetrating rays recorded seriatim on discrete films as a ray-source and object are relatively moved circularly in reference to the film. The apparatus



mounts the film and object for recording, and mounts the respective recorded data and moves each suitably with respect to the other to generate a series of laminal detail progressively through the object.

3,818,221

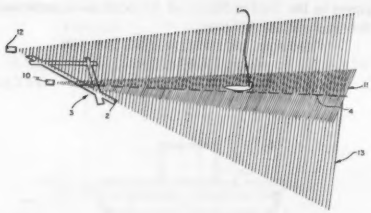
RADIATION GENERATOR PROVIDING AMPLITUDE MODULATION

Rimvydas Kaminskas, Redondo Beach, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 868,704, Oct. 23, 1969. This application Apr. 22, 1971, Ser. No. 136,344

Int. Cl. G21f *3/00*

U.S. Cl. 250—105 **9 Claims**



An aircraft landing system based upon two or more beams of nuclear radiation is disclosed. Each beam is shaped by a radiation generator to conform to a desired pattern and is frequency modulated by the generator for identification and comparison purposes. Overlapping of two beams provides a spatial plane to serve as one reference such as a glide slope. A second pair of overlapping beams aligned substantially perpendicular to the first reference provides a second spatial plane to serve as a second reference such as a localizer beam. Appropriate circuitry aboard approaching aircraft is provided to determine the position of the aircraft with respect to the two reference beams.

3,818,222

RADIATION MODULATION APPARATUS

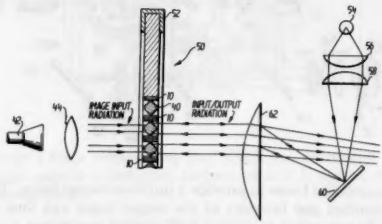
Arthur S. Jensen, Baltimore, Md.; James L. McIntyre, Big Flats, N.Y., and Homer A. Humiston, Arnold, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 14, 1973, Ser. No. 360,271

Int. Cl. G02f *1/28;* **H01j** *31/50;* **G01d** *5/30*

U.S. Cl. 250—213 R **14 Claims**

Radiation modulating apparatus is disclosed comprising a plurality of mirror surfaces disposed to receive radiation from a first unmodulated source. Each of the mirror surfaces is supported to permit deflection under the influence of a signal applied to an electrode disposed adjacent the mirror surface. The signal applied to the electrode is provided by a suitable radiation sensitive means such as a photodiode, upon which input radiation from a modulating source is directed. The radiation from the unmodulated source is isolated from the photodiode by a barrier comprised, for example, of a glass rod, which further serves to direct the radiation from the unmodulated source onto the mirror surface and, in turn, to direct the mirror modulated radiation therefrom. Further, the glass rod may serve to direct the radiation from the input



source onto the photodiode to control thereby the deflection of the mirror surface and therefore, the modulation of the radiation from the unmodulated source. A plurality of the assemblies comprising the radiation sensing means and the mirror surfaces, may be assembled together to form at an input, an array of radiation sensing means for sensing an input radiation image, and an array of mirror surfaces whereby radiation from an unmodulated source is variously reflected by the plurality of mirror surfaces in accordance with the input radiation image.

3,818,223

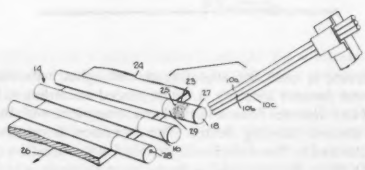
DEVICE FOR DETECTING CARBON ON CIGARETTE FILTER TIPS

Gerald Warren Gibson; Ned A. Sigmon, and Ransom Pitts Kirby, all of Durham, N.C., assignors to Liggett & Myers Incorporated, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,342

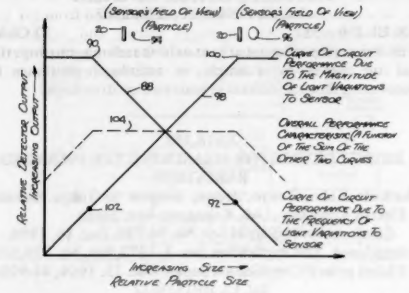
Int. Cl. G01n *21/26*

U.S. Cl. 250—223 **22 Claims**



Device for detecting faults, such as carbon granules, smudges, and/or other dark areas on the end of cigarette filters, including sources of light energy for casting light on a cigarette filter being inspected, photocells positioned for individually scanning the filter tips as the cigarettes travel on a conveyor through an inspection zone, and a detection circuit for producing a floating reference signal which is derived from the highest repeating signal levels from normal filter tips previously inspected. The detection circuit compares the instantaneous signals produced from the photocells with the floating reference signal in a manner whereby the dark area, resulting from a fault such as a carbon particle, when scanned by the photocells will produce an instantaneous sensing signal differing from the floating reference signal so as to indicate the presence of a fault. The detection circuit automatically compensates for variations in color and texture of the filter tip

material that could otherwise cause detection failure when utilizing a fixed type of reference. According to a further embodiment, the detection circuit includes an amplifier-filter


(SENSOR'S FIELD OF VIEW)
(PARTICLE)
(SENSOR'S FIELD OF VIEW)
(PARTICLE)
CURVE OF CIRCUIT PERFORMANCE DUE TO THE MAGNITUDE OF LIGHT VARIATIONS TO SENSOR
OVERALL PERFORMANCE CHARACTERISTIC (A FUNCTION OF THE SUM OF THE OTHER TWO CURVES
CURVE OF CIRCUIT PERFORMANCE DUE TO THE FREQUENCY OF LIGHT VARIATIONS TO SENSOR
RELATIVE DETECTOR OUTPUT INCREASING OUTPUT
INCREASING SIZE
RELATIVE PARTICLE SIZE

section having a frequency response characteristic which enables the device to detect the smaller size faults with substantially the same ease as the relatively larger size faults.

3,818,224

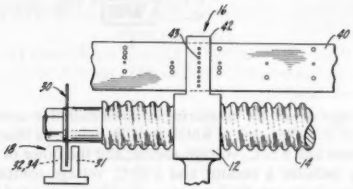
MEASUREMENT SYSTEM

Robert W. Schmidt, Oak Lawn, Ill., assignor to Copar Corporation, Oak Lawn, Ill.

Filed Jan. 2, 1973, Ser. No. 320,526

Int. Cl. G01d *5/34*

U.S. Cl. 250—231 SE **10 Claims**



A measurement system for converting length or distance from a reference point to a binary coded decimal (BCD) so that an electronic instrument can provide a length or distance readout or provide automatic setting of a machine part such as a spindle, slitter, slotter or positioning of guides at a predetermed distance setting.

3,818,225

METHODS FOR THERMAL NEUTRON DIFFUSION COEFFICIENT LOGGING

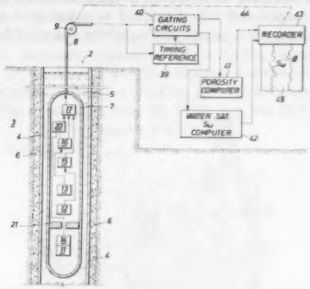
Michael P. Smith, Bellaire, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 289,901

Int. Cl. G01v *5/00*

U.S. Cl. 250—264 **10 Claims**

An illustrative embodiment of the present invention includes methods for thermal neutron diffusion coefficient logging. Two spaced thermal neutron detectors are deployed at different distances from a pulsed source of 14 MEV neutrons. Each detector samples the thermal neutron population over two different time intervals following the emission of a burst of neutrons by the source. Count signals from the detectors are combined according to predetermined relationships to derive signals representative of the thermal neutron



diffusion coefficient, the initial neutron age, the porosity and the water saturation of the earth formations in the vicinity of the borehole.

3,818,226

IDENTITY DOCUMENT AND A METHOD AND AN APPARATUS FOR CHECKING SUCH A DOCUMENT

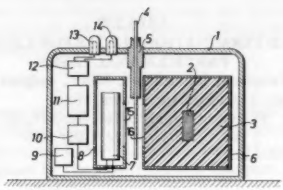
Ove Magnus Strindehag, Nukoping, Sweden, assignor to AB ID-Kort, Stockholm, Sweden

Filed June 7, 1971, Ser. No. 150,517

Claims priority, application Sweden, June 11, 1970, 8149/70

Int. Cl. G21h *5/00*

U.S. Cl. 250—302 **2 Claims**



An identity document contains a small quantity of a non-radioactive trace element. The trace element may be an element which absorbs thermal neutrons. In this case the identity document is checked by sending a flow of thermal neutrons through the document and measuring the absorption of the neutrons. Alternatively, the trace element may be an element which, upon being exposed to neutron radioation, creates a secondary radiation. In this case the identity document is checked by exposing the document to thermal neutrons and measuring the secondary radiation.

3,818,227

RADIOACTIVE TRACER SYSTEM TO INDICATE DRILL BIT WEAR OR FAILURE

Bernard A. Fries, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

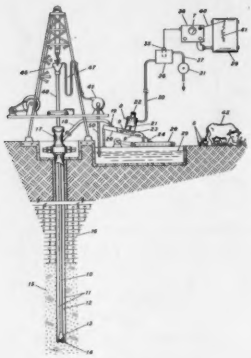
Continuation-in-part of Ser. No. 55,635, July 17, 1970, abandoned. This application Aug. 18, 1972, Ser. No. 281,869

Int. Cl. G21h *5/02*

U.S. Cl. 250—303 **3 Claims**

A radioactive tracer system for indicating drill bit wear or failure utilizing radioactive krypton 85 in clathrate form, in the form of water-soluble kryptonates, or dissolved in grease. Preferably the radioactive krypton is placed so that when drill

bit wear or failure occurs, the radioactive krypton 85 is released and effectively becomes diffused in the circulating drilling fluid. At the surface, the radioactive krypton 85 gas is separated from the circulating drilling fluid by gas-mud separating means and is transported as a gas to a counting chamber where an accurate radioactivity count of beta rays



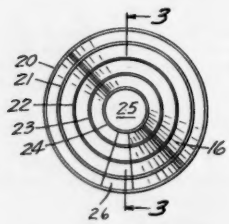
released from the krypton is obtained. The beta rays indicate drill bit wear or failure when detected above the normal background radioactivity of the recirculating drilling fluid. The radioactive krypton may also be implanted in the teeth or other surfaces of the cones of drill bits or implanted in the shirttail or other body parts of the bit.

3,818,228

FIELD TERMINATION PLATES FOR CHARGED PARTICLE ANALYZERS

Paul W. Palmberg, Minneapolis, Minn., assignor to Physical Electronics Industries, Inc., Edina, Minn.

Filed Aug. 17, 1973, Ser. No. 389,329
Int. Cl. G01n *23/22*; G01t *1/36*
U.S. Cl. 250—305 **12 Claims**



A field termination plates is provided for charged particle analysis apparatus wherein the plate includes an electrical insulator substrate which has a surface thereof a plurality of narrow width conductive strips arranged to correspond to equipotential lines. Over a portion of a surface a band of high resistance material is deposited in contact with and transverse to said conductive strips. Over the entire surface including the conductive strips and the band of high resistance material is deposited a very high resistance electrically conductive material.

3,818,229

RADIOPAQUE AGENTS COMPRISING BROMINATED PERFLUOROCARBONS

David M. Long, Jr., Villa Park, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Dec. 21, 1970, Ser. No. 100,293
Int. Cl. C09k *3/00*; G01t *1/00*
U.S. Cl. 250—312 **12 Claims**

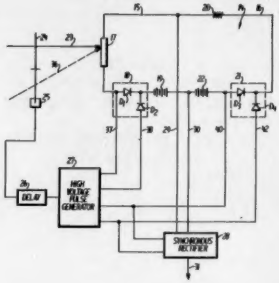
Brominated perfluorocarbons exhibit radiopaque properties and are useful, for example, in radiologic processes for discovering flaws or defects in materials or structures.

3,818,230

BRIDGE DEVICE FOR MEASURING THE INFRARED RADIATION

Moritada Kubo, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 96,730, Dec. 10, 1970, abandoned. This application Jan. 2, 1973, Ser. No. 320,551
Claims priority, application Japan, Dec. 13, 1969, 44-99846
Int. Cl. H01j *39/12*
U.S. Cl. 250—338 **3 Claims**



A bridge device for measuring infrared radiation comprises a pair of branches, one of which serially includes a thermistor bolometer and a D.C. voltage source, and the other of which serially includes a resistor and a D.C. voltage source. The thermistor bolometer is located so as to be illuminated by the radiation of the infrared rays being measured as the same are passed through an opening of a rotary sector. Means are provided for periodically applying high voltage pulses respectively to the branches of the bridge circuit in order to momentarily increase the voltage levels of the D.C. voltage sources during the period that the radiation from the incident infrared rays being measured falls on the thermistor bolometer. A synchronous rectifier, which operates in a synchronized relation with the aforesaid pulses, is provided for producing an unbalanced voltage between the branches of the bridge, the same being an indication of the infrared rays being measured.

3,818,231

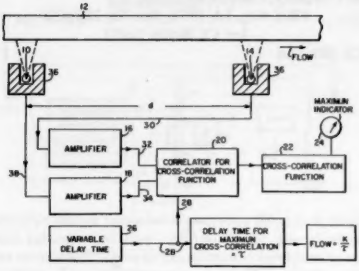
N-16 NUCLEAR REACTOR COOLANT FLOW RATE MEASURING SYSTEM

Raj Gopal, Monroeville, Pa., and Harald H. Weiss, Vienna, Austria, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 20, 1971, Ser. No. 164,393
Int. Cl. G01n *23/12*
U.S. Cl. 250—356 **8 Claims**

A method and apparatus is disclosed for measuring the primary coolant flow rate in the coolant loops of a nuclear reactor which utilizes the statistical variation of the N-16 activity

in the coolant water. The flow rate is calculated based upon knowing the distance between two N-16 detectors positioned



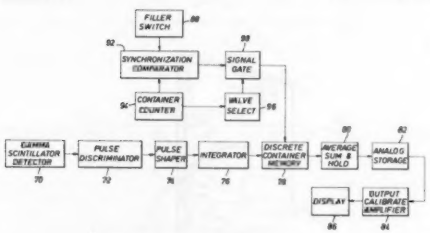
along the reactor coolant loops and determining the time which elapses for an activity pattern to travel from one detector to a second detector positioned downstream.

3,818,232

CONTAINER FILL LEVEL INSPECTOR WITH PRODUCT AVERAGING SYSTEM

Frederick J. Kirkpatrick, Austin, Tex., assignor to Nuclearay Inc., Austin, Tex.

Filed Dec. 13, 1972, Ser. No. 314,769
Int. Cl. G01n *23/10*
U.S. Cl. 250—357 **17 Claims**



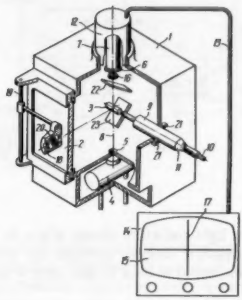
Method and apparatus for continuous monitoring of containers being conveyed from an automatic filling machine after completion of the filling operation to determine the average fill level of the containers. Averaging may be accomplished by a block averaging system that averages the fill level for selected groups of the filling heads of the machine, averages the fill level for a selected filling head of the machine or provides continuous averaging of all of the filling heads of the filling machine. The monitoring system may also employ a synchronization circuit to insure accuracy of the fill level averaging accomplished by the system. Fill level signals generated by inspection of each container being conveyed from the filling machine may be stored temporarily while synchronization is confirmed between a selected number of the filling heads of the machine and the number of containers filled by the filling heads of the machine during each filling cycle thereof.

3,818,233

X-RAY TELEVISION MEASURING MICROSCOPE

Nikolai Vasilievich Rabodzei, Institutskaya ulitsa, 6a, kv. 39; Evgeny Mikhailovich Ljubimov, ulitsa Lenina, 14, kv. 21; Mikhail Nikolaevich Nadobnikov, ulitsa Vokzalnaya, 21, kv. 7, and Alexandr Alexandrovich Krokhin, ulitsa Tsentralnaya, 12, kv. 8, all of Fryazino Moskovskoi oblasti, U.S.S.R.

Continuation of Ser. No. 52,819, July 7, 1970, abandoned.
This application June 28, 1972, Ser. No. 267,256
Int. Cl. H01j *37/00*
U.S. Cl. 250—444 **4 Claims**



An X-ray television measuring microscope of the type including a source of X-radiation, a protective working chamber for accommodating objects to be examined, an X-ray sensitive television converter for converting the X-ray shadow image of the object being examined into a video signal, the improvement comprising at least one optical sighting device for observation of the external portions of the object being examined which are not revealed in the X-ray image, the optical axis and sighting plane of said sighting device being fixed relative to the axis of the beam of X-radiation.

3,818,234

RADIATION ABSORBING SHIELD FOR PERSONNEL AND MATERIALS AND METHOD OF MAKING SAME

Bobby L. Atkins, and Robert N. Bashaw, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 214,394, Dec. 30, 1971. This application Oct. 16, 1972, Ser. No. 297,774
Int. Cl. G21f *1/00*
U.S. Cl. 250—515 **8 Claims**

A radiation absorbing shield is constructed by providing within confining walls a continuous or particulate gelled aqueous solution containing suitable soluble and/or insoluble radiation absorbing metal salts, or metal particles, said insoluble salts or metal particles being uniformly dispersed throughout the gelled solution. Monomers, e.g., acrylamide, can be polymerized in the aqueous solution containing the radiation absorbing material, in situ, or they can be polymerized, dried and pulverized and mixed with the aqueous solution to form a particulate mass of gel utilizable as a shield against radiation.

3,818,235

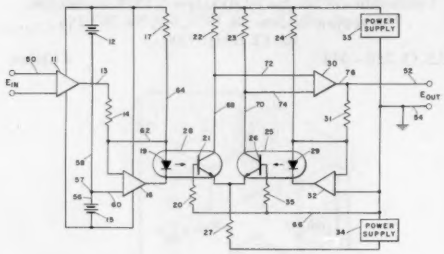
METHOD AND CIRCUIT FOR PROVIDING AN OPTICALLY COUPLED LINEAR ISOLATOR

Delbert L. Johnson, and Kenneth B. Muehleman, both of San Diego, Calif., assignors to Delbert L. Johnson, San Diego, Calif.

Filed Aug. 21, 1972, Ser. No. 282,380
Int. Cl. G02f *1/28*
U.S. Cl. 250—551 **12 Claims**

A method and circuit for transmission of an electrical signal from one circuit to another with there being no electrical con-

nection therebetween, such as from a battery source circuit to a ground oriented, electrical power line circuit through an isolator circuit, in which the transmission is by modulating an emitter of light radiation in one of two identical light radiation



circuits. The other light radiation circuit aligns its voltage to the first light radiation circuit through an error signal, whereby the output signal is held to the same voltage as the input signal.

3,818,236

APPARATUS FOR DETECTING BROKEN THREADS OR OTHER DISTURBANCES IN A FIBRE WEB

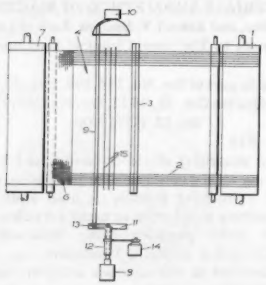
Bjorn Ivar Lind, Goteborg, and Mans Gunnar Ove Mansson, Killeberg, both of Sweden, assignors to Nordiska Maskinfilt Aktiebolaget, Halmstad, Sweden

Filed Aug. 17, 1972, Ser. No. 281,424

Claims priority, application Sweden, Aug. 23, 1971, 10637/71

Int. Cl. G01n *21/30*

U.S. Cl. 250—561 **12 Claims**



An apparatus for the supervision of fibrous webs, or other sheet-like material, particularly within the textile and paper industries, with the purpose of detecting faults in webs. An emitter is positioned at one side of the web and arranged to give off a beam of light essentially at right angles to the web extension. A receiver, positioned at the opposite side of the web, receives the beam of light. In accordance with the invention, the beam is imparted a particular movement covering an area of the web where faults are likely to arise and the immediate vicinity of said area. Evaluation means register any disturbances and compare them with a predetermined value, and upon excess of said predetermined value an impulse is emitted to a warning and/or stopping mechanism.

3,818,237

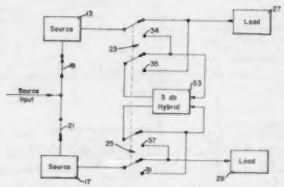
MEANS FOR PROVIDING REDUNDANCY OF KEY SYSTEM COMPONENTS

Thomas M. Straus, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 14, 1972, Ser. No. 280,624

Int. Cl. H04m *19/02*

U.S. Cl. 307—64 **1 Claim**



A system is disclosed for providing equipment redundancy where, in one embodiment, two substantially identical sources respectively supply substantially identical signals to two load circuits under normal operating conditions. In this embodiment, switching means is coupled to a 3 decibel hybrid and also to the sources and load circuits. When one of the sources fails, the switching means is utilized to operationally remove the defective source from its associated load circuit and to couple the remaining source to one input of the 3 decibel hybrid. Two outputs of the hybrid are respectively coupled through the switching means to the load circuits to then enable the load circuits to continue operating.

3,818,238

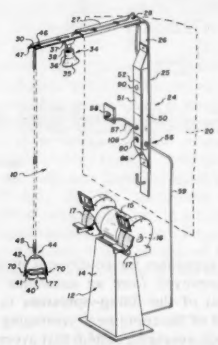
SAFETY APPARATUS

George Lemire, Green Charlotte Islands, Juskatla, British Columbia, Canada

Filed Sept. 5, 1972, Ser. No. 286,471

Int. Cl. H01h *3/16*

U.S. Cl. 307—92 **10 Claims**

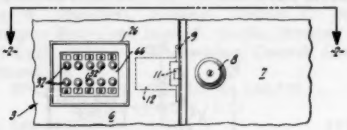


Safety apparatus intended to safeguard the operation of a machine and to discourage overloading of an electric motor powering the machine. The machine is one which requires the operator to wear an eye or face protector and incorporated in the protector is switch means connected by an electric circuit to the machine motor. Only when the protector is in normal position of use will the machine operate or the work be properly illuminated by a floodlight also forming part of the circuit. A heat sensitive switch in the circuit aids in preventing the operator from overloading the machine motor.

3,818,239
SELECTIVE SWITCH ACTUATOR

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed June 11, 1973, Ser. No. 368,743
Int. Cl. H01h *19/14*
U.S. Cl. 307—115 **7 Claims**

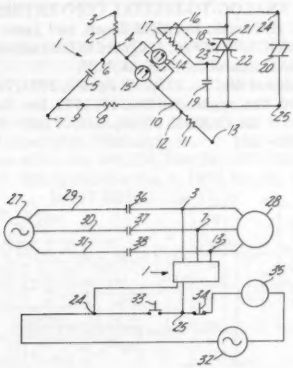


A selective switch actuator is provided for a lock having an electrical release. Circuitry controlling the electrical release includes several setting switches manually operated to select a combination. The circuitry also includes several actuating switches. Simultaneous firm closure of the actuating switches in the selected combination energizes the electrical release. Closure of the actuating switches in other than the selected combination or other than firmly and simultaneously, even in the selected combination, does not energize the release but gives an alarm. A special duress switch may be provided to give the alarm at any time.

3,818,240
ELECTRICAL PHASE MONITORING CIRCUIT

Joseph C. Poppelreiter, II, Sterling Heights, Mich., assignor to Kubik Hydradrives, Inc., Troy, Mich.

Filed May 4, 1973, Ser. No. 357,400
Int. Cl. H01h *83/18*
U.S. Cl. 307—127 **5 Claims**

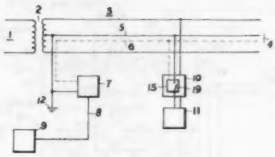


An electrical circuit for monitoring or indicating the sequence of electrical phases or the direction of rotation of a multi-phase electrical motor. The rotation monitor includes a delta connected arrangement of a capacitor in one arm, a resistor in another arm, and the third arm including the parallel combination of a light and a lamp of a photocell unit. The three terminals of the delta arrangement are connected to the three-phase conductors of a source or electrical apparatus to be tested, the terminals on either side of the parallel arrangement of lamp and light are connected through the intermediary of two equal resistors. If the phase relationship is correct, the lamp and the light will be energized, and a photosensitive resistor associated with the photocell will turn on a triac whose output can be used for many applications.

3,818,241
LOAD CONTROLLING RECEIVER

Michihiro Ishizaka; Makoto Mikuriya, both of Amagasaki, and Katsumi Taketa, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 8, 1971, Ser. No. 178,689
Claims priority, application Japan, Sept. 8, 1970, 45-78770; Dec. 28, 1970, 45-126079
Int. Cl. H01h *47/20*
U.S. Cl. 307—140 **11 Claims**

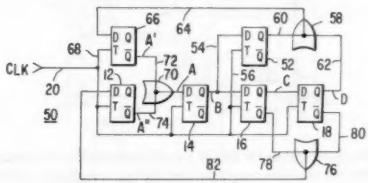


A load controlling receiver for controlling the application of power to a load in response to a control signal is disclosed. The load controlling receiver includes a remote control relay which includes a time delay to prevent triggering due to noise or spurious signals. The relay is switched by control signals of specific frequencies. A central control unit is coupled to the relay circuit by means of a composite conductor including the ground or neutral conductor of a low voltage distribution line.

3,818,242
HIGH-SPEED LOGIC CIRCUITS

David Daniel Freedman, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 200,796, Nov. 22, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,271
Int. Cl. H03k *19/22*
U.S. Cl. 307—218 **13 Claims**



A high-speed logic circuit for use in a pseudo random code generator which is capable of operating at high speed. Rather than including a gate such as an EXCLUSIVE OR or EXCLUSIVE NOR gate the feedback loop of a shift register, the same function is performed by phantom OR gates in the feedback loop and register and one or more additional logic stages. The phantom OR gates introduce essentially no delay as compared with EXCLUSIVE OR or EXCLUSIVE NOR gates, and each additional logic stage (which may be a flip-flop or the like) operates concurrently with a register storage stage and also introduces no added delay.

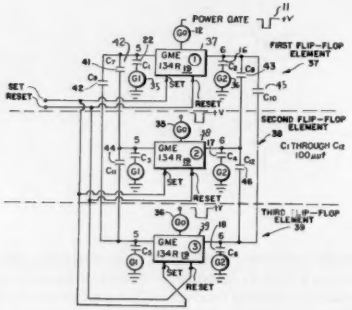
3,818,243
ERROR CORRECTION BY REDUNDANT PULSE POWERED CIRCUITS

Robert E. McMahon, Dunstable, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 225,066, Sept. 9, 1971, abandoned, which is a continuation of Ser. No. 703,365, Feb. 6, 1968, abandoned. This application Jan. 12, 1973, Ser. No. 323,003

Int. Cl. G06f *11/08*; H03k *19/08*

U.S. Cl. 307—219 8 Claims



A redundant circuit which utilizes pulsed power techniques to achieve low power and high reliability by automatic error correction, through the interconnection of capacitors of the various redundant circuit elements.

3,818,244
LIMITERS FOR NOISE REDUCTION SYSTEMS

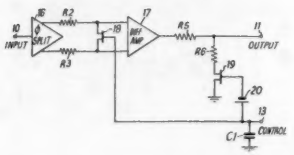
Ray Milton Dolby, and David Peter Robinson, both of London, England, assignors to Dolley Laboratories Inc., New York, N.Y.

Division of Ser. No. 107,624, Jan. 19, 1971. This application Mar. 6, 1973, Ser. No. 345,228

Claims priority, application Great Britain, Jan. 23, 1970, 3351/70

Int. Cl. H03k *5/08*

U.S. Cl. 307—237 5 Claims



Limiters are known utilizing a shunt FET rendered conductive by a smoothed control signal to attenuate a signal. In this invention distortion is reduced by effecting positive feedback of half of the FET output voltage via a control signal smoothing capacitor or by putting the FET across a balanced line on the output side of a phase splitter. Furthermore, by using two or more shunt FETs having different thresholds, better control of the attenuation characteristics over the whole dynamic range is possible.

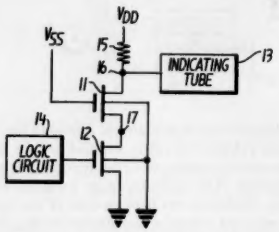
3,818,245
DRIVING CIRCUIT FOR AN INDICATING DEVICE USING INSULATED-GATE FIELD EFFECT TRANSISTORS

Yasoji Suzuki, Kawasaki, and Masataka Hirasawa, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Tokyo, Japan

Filed Jan. 5, 1973, Ser. No. 321,341

Int. Cl. H03k *17/00*

U.S. Cl. 307—251 7 Claims



A driving circuit is disclosed which comprises first and second insulated-gate field effect transistors connected in series between two terminals of a power source. The gate of the first transistor is supplied with a bias potential and the gate of the second transistor is supplied with a driving signal. The power source voltage is selectively applied to an indicating device as a firing voltage under control of the second transistor. The first transistor normally operates in a saturated state. Accordingly the second transistor performs switching operations while being protected from the high voltage of the power source.

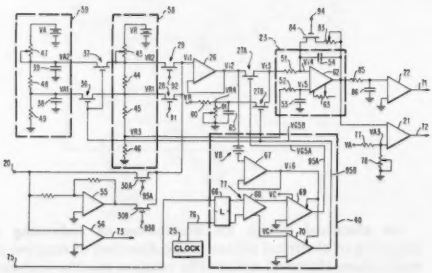
3,818,246
SWITCHING CIRCUITS PARTICULARLY USEFUL FOR ANALOG-TO-DIGITAL CONVERTERS

George A. Hellwarth, Deerfield Beach, and James E. Milton, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 131,748, April 6, 1971, Pat. No. 3,733,600. This application Dec. 11, 1972, Ser. No. 313,895

Int. Cl. H03k *17/60*, *5/153*, *13/02*

U.S. Cl. 307—251 3 Claims



Time delays associated with switching controls of analog-to-digital converter circuits permit switching transients to be blocked from reducing conversion accuracy. The time delays allow switching to be performed while normal conversion operations are suspended. Appropriate converter components are maintained with quiescent operating levels between conversion cycles so that drifting of those components during conversion cycles is minimized. At least the final portion of a simulated conversion cycle is used as a precedent to each con-

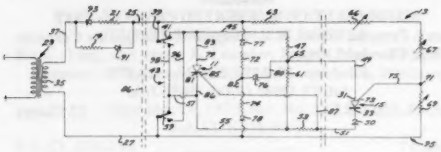
version cycle so that the initiating and completing conversion levels are maintained equivalent. A precision semiconductor switch effects on-off switching with constant resistance by referencing the switch control signals to the switch input level.

3,818,247

TWO-LEAD ELECTRICAL CONTROL APPARATUS

William W. Chambers, Anaheim; Charles C. Olander, Huntington Beach, and James N. Brooks, Hermosa Beach, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 3, 1972, Ser. No. 240,700
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 F **13 Claims**



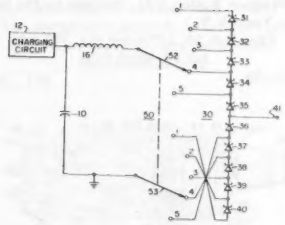
Two-lead electrical control apparatus including a pair of gate controlled switches that form a control switch and a triggering switch, the control switch being connected across a power source and through a load by means of a pair of run leads. A voltage divider circuit is connected with the gate of the triggering switch and includes sensing means responsive to a pre-selected condition to impose a recurring triggering signal on the triggering switch to render such triggering switch conductive to supply a triggering signal to the control switch to thereby trigger the control switch and provide full source voltage across the load.

3,818,248

SERIALLY CONNECTED SEMICONDUCTOR SWITCHING DEVICES SELECTIVELY CONNECTED FOR PREDETERMINED VOLTAGE BLOCKING AND RAPID SWITCHING

Paul F. Pittman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 146,234, May 24, 1971, Pat. No. 3,731,185. This application Dec. 6, 1972, Ser. No. 312,439
Int. Cl. H03k *17/04, 17/10*
U.S. Cl. 307—258 **4 Claims**



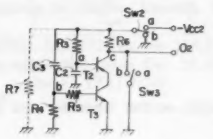
An improved high frequency voltage test apparatus for insulated conductors is provided with a switching arrangement, preferably utilizing solid state switching devices, particularly reverse switching rectifiers, with means to minimize the turn on time of the switching devices and thus increase their life and reliability and also permit operation of the apparatus over a wide voltage range.

3,818,249

PULSE GENERATING CIRCUIT

Yuichi Teranishi, and Yoshikazu Hatsukano, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,540
Claims priority, application Japan, Dec. 29, 1971, 46-3478
Int. Cl. H03k *5/01*
U.S. Cl. 307—268 **13 Claims**



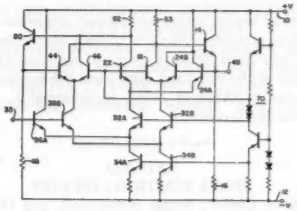
A pulse generating circuit includes time constant circuits, switching circuits, and means to apply the output signals of the time constant circuits to the switching circuits, whereby a pulse signal suitable as, for example, a clear signal is generated at a predetermined time after the closure of a power switch.

3,818,250

BISTABLE MULTIVIBRATOR CIRCUIT

L. J. Reed, Mesa, and Ronald L. Treadway, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 7, 1973, Ser. No. 330,181
Int. Cl. H03k *3/286, 21/06*
U.S. Cl. 307—289 **11 Claims**



A bistable multivibrator circuit which is readily adaptable to monolithic integrated circuit technology combines the master and slave portions and utilizes split current sources to reduce the components needed to provide a master/slave circuit operation when the multivibrator is used either as a frequency divider or as a gated logic circuit.

3,818,251

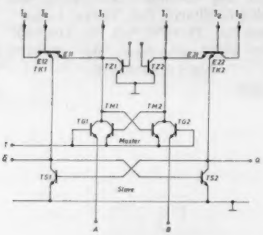
MONOLITHIC INTEGRATED MASTER-SLAVE FLIP-FLOP CIRCUIT

Wolfgang Hoehn, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed June 12, 1973, Ser. No. 369,342
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **4 Claims**

This invention relates to a monolithically integrable master-slave flip-flop comprising an input stage, a master stage, a

coupling stage and a slave stage. To reduce current consumption, the coupling between the master, slave and input is effected by a single emitter transistor and a double emitter transistor.



3,818,252

UNIVERSAL LOGICAL INTEGRATED CIRCUIT

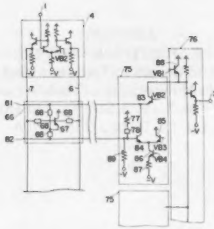
Tsuneyo Chiba, and Akira Masaki, both of Kadaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,898

Claims priority, application Japan, Dec. 20, 1971, 46-102721; Jan. 21, 1972, 47-7621

Int. Cl. H03k *19/08, 19/20;* **H01l** *19/00*

U.S. Cl. 307—303 **8 Claims**



A universal logical integrated circuit comprises a plurality of word lines crossing a plurality of digit lines driven by input variables, and fixed memory elements installed at individual cross-points of the word and digit lines, the memory contents of the memory elements being programmable, whereby a desired function is realized.

3,818,253

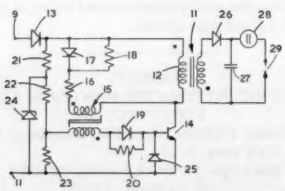
SPARK IGNITION CIRCUITS

Henry James Chafer, Hemel Hempstead, and Owen Edgar Wright, Tring, both of England, assignors to Rotax Limited, Birmingham, England

Filed Feb. 13, 1973, Ser. No. 332,082

Int. Cl. H03k *3/36*

U.S. Cl. 307—314 **6 Claims**



A spark ignition circuit includes an output transformer having a secondary winding, and a primary winding which is connected in series with the collector emitter path of a transistor and the source of d.c. supply. The secondary winding charges a capacitor to a rectifier and the capacitor is discharged periodically through a spark circuit. The circuit further includes a switching transformer having a saturable core, and the switching transformer provides base drive for the transistor during the conduction period thereof, the transistor becoming substantially non-conductive when the core of the switching transformer saturates the core of the switching transformer being reset by the voltage developed in the primary winding of the output transformer when the flux collapses, and by a voltage developed in the circuit of the secondary winding of the output transformer.

3,818,254

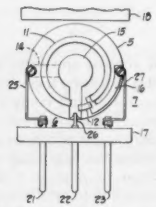
THERMALLY COMPENSATED CRYSTAL UNIT

Sten I. Persson, Naples, N.Y., assignor to The Quality Corporation, Cleveland, Ohio

Filed Jan. 18, 1973, Ser. No. 324,570

Int. Cl. H04r *17/00;* **H05b** *3/06*

U.S. Cl. 310—8.1 **12 Claims**



An apparatus for thermally compensating a piezoelectric crystal using electric current is disclosed and comprises a resistive heater and a resistive sensor each mounted to the surface of the crystal. The resistive sensor has a greater absolute value of temperature coefficient of resistivity than the resistive heater and is connected to the resistive heater to reduce the electric current to the resistive heater upon a temperature increase of the crystal. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,818,255

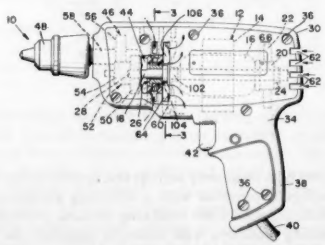
BEARING ASSEMBLY FOR POWER TOOLS HAVING A PLASTIC HOUSING

Robert W. Wagner, Easley, S.C., assignor to The Singer Company, New York, N.Y.

Filed July 30, 1973, Ser. No. 383,948

Int. Cl. H02k *9/06*

U.S. Cl. 310—50 **5 Claims**



A bearing assembly for a power tool, such as a drill, having a plastic housing in which is mounted a universal motor. The

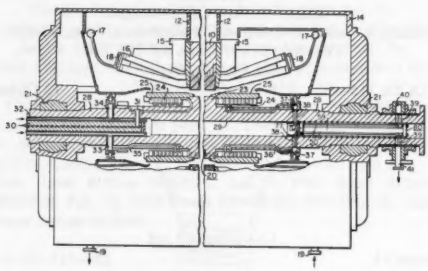
motor has an armature and a stator, with the armature shaft disposed axially in the housing and having a fan affixed thereto. Cooling apertures are formed in a motor chamber in the housing in axially spaced relationship to each other on either side of the fan to permit ventilating air to enter and to exit the housing to cool the motor. A first bearing means journals one end of the armature shaft in the housing. An improved second bearing journals the other end of the armature shaft adjacent a second chamber which may be in communication with the motor chamber. The improved bearing includes a plurality of circumferentially spaced axial apertures that are formed to permit the flow of ventilating air from the second chamber therethrough, drawn by the fan in the motor chamber, to cool the second bearing and the housing.

3,818,256

TUBE-TENSION DEVICE FOR WATER COOLED TURBINE GENERATOR ROTORS

Sui C. Ying, and James E. Luzader, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 29, 1973, Ser. No. 327,521
Int. Cl. H02k *9/00*
U.S. Cl. 310—59 **7 Claims**



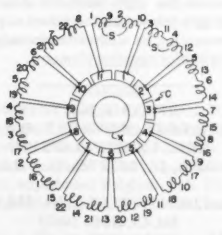
A water cooled rotor for a large turbine generator in which the water coolant is discharged through a corrosion resistant tube extending through the bore of the rotor shaft. In order to accommodate differential thermal expansion of the corrosion resistant tube, the tube is pre-stressed in tension against a bracing member.

3,818,257

ROTARY ARMATURE FOR A ROTARY DYNAMOELECTRIC MACHINE

John H. Porter, Talmadge; William A. Krebs, Ravenna; Jackie D. Stevens, Talmadge, all of Ohio, and Robert G. Dobbin, Racine, Wis., assignors to Ametek, Inc., New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,208
Int. Cl. H02k *3/12*
U.S. Cl. 310—179 **3 Claims**



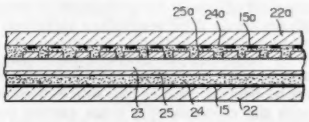
A twenty-two-slot, eleven-bar armature especially suited for a low cost fractional horsepower motors exemplifies a half-coil per slot winding structure with the number of sub-coils twice the commutator bar number, each coil comprised of a respective pair of series-connected equal turn sub-coils; which permits flexibility in chording of the coils and double flyer winding, winding placement for improved commutation, and use of a lower cost commutator, and provides a shorter, stronger more durable low cost armature, improved armature cooling, and minimization of magnetic noise in the motor.

3,818,258

DISPLAY DEVICE UTILIZING GAS DISCHARGE

Yasunari Shirouchi, Akashi, and Toshinori Urade, Kobe, both of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

Filed Dec. 14, 1972, Ser. No. 315,017
Claims priority, application Japan, Dec. 29, 1971, 46-751
Int. Cl. H01j *61/00*
U.S. Cl. 313—188 **8 Claims**



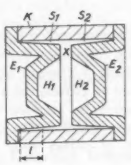
The present invention relates to a plasma display panel comprising two substrates defining a gap in which an ionizable gas is disposed. On at least one of the substrates there are a plurality of electrodes disposed on the side thereof closer to said gap. Covering said electrodes are dielectric means which contact said gap. The dielectric means comprises a first portion having a high secondary electron emissivity and a second portion having a secondary electron emissivity lower than said first portion. The plasma display panel according to the present invention can be used to improve the definition of a displayed pattern in the plasma display panel, or as a self shift plasma display panel, and or as a pattern generator in an information processing system.

3,818,259

GAS-FILLED DISCHARGE TUBE FOR TRANSIENT PROTECTION PURPOSES

Carl Arne Schleimann-Jensen, Danderyd, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 23, 1973, Ser. No. 335,013
Claims priority, application Sweden, Mar. 13, 1972, 3142/72
Int. Cl. H01j *17/04*
U.S. Cl. 313—217 **8 Claims**



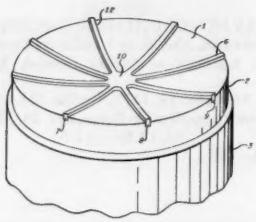
A gas-filled discharge tube for use as transient protection device has at least two electrodes separated by a discharge gap and one insulating body which provides a vacuum sealed housing for the electrodes. Between the electrodes the insulating body defines a narrow gap in the direction from the discharge gap to the junction between one electrode and the insulating body around the whole electrode. This narrow gap has a maximum width of 0.15 mm along a distance which has a length of at least 1 mm.

3,818,260

ELECTRON GUN WITH MASKED CATHODE AND NON-INTERCEPTING CONTROL GRID

Thomas B. Elfe, Jr., Gainesville; Otto G. Koppius, Clermont, and Ronald R. Willis, Gainesville, all of Fla., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,114
Int. Cl. H01j *1/46, 21/10*
U.S. Cl. 313—299 **1 Claim**



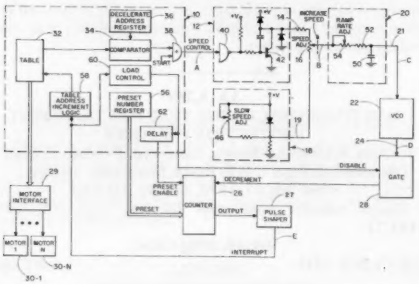
An electron beam generating cathode having a masking structure in its electron emitting face with its masking element aligned with the elements of a beam current control grid prevents accelerated electrons from damaging or destroying the control grid elements by over heating.

3,818,261

STEPPING MOTOR SPEED CONTROL APPARATUS

Charles J. Clarke, Jr., Hopkington, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 23, 1971, Ser. No. 211,520
Int. Cl. G05b *19/40*
U.S. Cl. 318—696 **17 Claims**



Acceleration of a stepping motor is provided by means of a stream of pulses whose frequency is increased with time and by means for generating a control signal in response to a predetermined number of pulses, each of the control signals directing that the motor be stepped in accordance with a predetermined pattern. Deceleration control is provided by providing the stream of pulses with a frequency which is decreased with time.

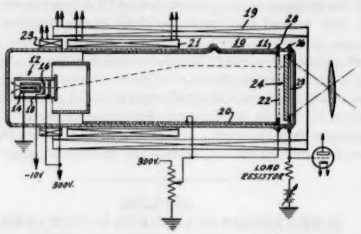
3,818,262

TARGETS FOR TELEVISION PICKUP TUBES

Stanley V. Forgue, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1955, Ser. No. 526,407
Int. Cl. H01j *29/70*
U.S. Cl. 315—11 **10 Claims**

An improved target for a television camera tube comprises a single layer of material with portions of the material treated to form a P-type region, while other portions may be treated to form a N-type region. Between these regions is an intrinsic region including a rectifitying junction. Either the P-type region



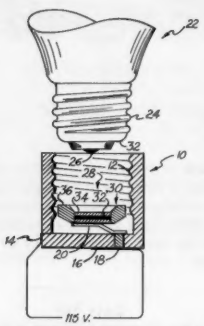
or the N-type region may be seanned by an electron beam, depending upon the type of operation, from a conventional electron gun.

3,818,263

ELECTRONIC COMPONENT

William R. Belko, 38 Cedarwood Ln., Shelton, Conn. 06484

Filed May 5, 1972, Ser. No. 250,740
Int. Cl. H01j *7/44*
U.S. Cl. 315—32 **12 Claims**



Devices for prolonging the life of an electric light bulb adapted to fit into a light socket between the central contact of the light socket and the central contact of the light bulb. Disclosed are combinations of rectifying and resistive elements, preferably temperature responsive resistive elements which function to reduce turn-on surges and lower the operating temperature of the bulb filament. Also disclosed is a method of utilizing a printed circuit board to provide physical and electrical mounting as well as component encapsulation for the rectifying and/or resistive elements.

3,818,264

THERMAL VOLTAGE CONTROL FOR A CHRISTMAS TREE LIGHTING SPRING

George Bynum Davis, Jr., 7512 Marbury Rd., Bethesda, Md. 20014

Filed Jan. 17, 1973, Ser. No. 324,307
Int. Cl. H05b *39/02*
U.S. Cl. 315—72 **2 Claims**

This invention relates to a thermal voltage control for a Christmas tree lighting string which in operation applies two

or more slightly varying voltage changes to the lamps of the string thereby to produce a soft twinkling or shimmering of the

lamps in pleasing contrast to the on and off effect produced by the conventional flasher.

3,818,265

LIGHTING SYSTEMS FOR ROAD VEHICLES

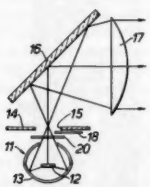
Harris Vernon Hicks, 61 Ferndale Rd., Lichfield, and Kenneth James Jones, 67 Welford Rd., Sutton Coldfield, both of England

Division of Ser. No. 798,744, Feb. 12, 1969, Pat. No. 3,673,421, which is a continuation-in-part of Ser. No. 734,300, June 4, 1968, which is a continuation-in-part of Ser. No. 485,788, Sept. 8, 1965, abandoned. This application May 10, 1971, Ser. No. 141,818

Claims priority, application Great Britain, Sept. 30, 1964 Great Britain 39751/64; Sept. 21, 1965 Great Britain 39751/65; Sept. 9, 1966 Great Britain 40308/66; Sept. 4, 1967 Great Britain 40308/67; Jan. 1, 1968 Great Britain 00017/68; Jan. 1, 1968 Great Britain 00018/68; Jan. 1, 1968 Great Britain 00019/68; Feb. 23, 1968 Great Britain 8815/68; Feb. 22, 1968 Great Britain 8816/68

Int. Cl. B60q *1/02*

U.S. Cl. 315—82 **4 Claims**



A lighting system for a road vehicle wherein a projector produces a beam of light illuminating the road in front of the vehicle and a receiver senses light from sources in front of the vehicle. Certain wave-lengths are removed from the projected beam and the receiver is principally sensitive to these wavelengths, so that the risk of the system being operated by its own reflected light is minimised.

3,818,266

LOAD CURRENT PULSE CONTROL DEVICES

Zoltan Vital, Uccle, and Jean Orban, Clabecq, both of Belgium, assignors to Ponder & Best, Inc., Los Angeles, Calif.

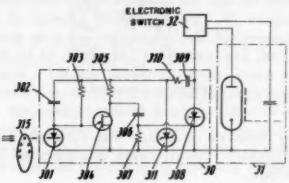
Filed July 27, 1972, Ser. No. 275,886

Claims priority, application Belgium, Feb. 13, 1968, 54471; Nov. 21, 1968, 66425; Dec. 27, 1968, 68017; Jan. 20, 1969, 68982

Int. Cl. H05b *37/02*

U.S. Cl. 315—151 **12 Claims**

A device for controlling the termination of light emission by a flash device including means for detecting the light reflected from the subject being illuminated by the flash, integrating means connected to the detecting means for providing a flash termination signal when the total amount of light received by the detecting means reaches a predetermined value, and flash termination means connected to the integrating device and to



the flash device for terminating the delivery of electrical energy to the flash device when the signal from the integrating device reaches its predetermined value. The flash termination device is preferably constituted by a novel gas-filled, arc-producing element having identical, unpolarized electrodes and an internal or external triggering electrode.

3,818,267

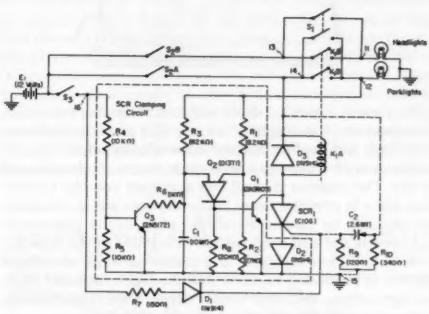
CIRCUIT BREAKER FOR THE LIGHTING SYSTEMS OF VEHICLES

George B. Hill, and Bryant D. Lund, both of Salt Lake City, Utah, assignors to Brimco Manufacturing Company, Salt Lake City, Utah

Filed Feb. 26, 1969, Ser. No. 802,469

Int. Cl. B60q *1/08*

U.S. Cl. 315—82 **10 Claims**



A compact, solid state, switching circuit which functions as an automatic circuit breaker for the lighting systems of a motor vehicle comprises a relay, energized through an electronic switch which is gated off, preferably after a time delay, when the ignition switch of the vehicle is opened.

3,818,268

IGNITION CIRCUIT FOR LAMPS

Guenter Peltz, Wasser, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sept. 26, 1972, Ser. No. 292,374

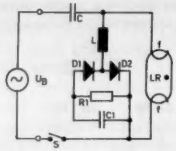
Claims priority, application Germany, Oct. 11, 1971, 2150576

Int. Cl. H05b *37/00*

U.S. Cl. 315—244 **9 Claims**

An ignition circuit for lamps such as gaseous discharge lamps as, for example, fluorescent lamps, including a series-resonant circuit having a quality factor Q of from 2 to 5. The series resonant circuit is connected to an electronic switch and the lamp is coupled across the series combination of one impedance of the resonant circuit and the electronic switch. The

electronic switch exhibits the characteristic of automatically opening or disconnecting after a predetermined time delay.



The lamp may therefore be ignited with the shunt impedance of the series-resonant circuit being disconnected from the lamp after ignition.

3,818,269

SYSTEM FOR ION PRODUCTION

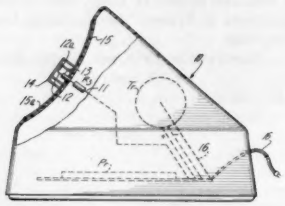
Walter Otto Stark, P.O. Box 1, 6983 Magliaso-Lugano, Switzerland

Filed May 25, 1972, Ser. No. 256,927

Claims priority, application Switzerland, May 29, 1971, 7903/71

Int. Cl. H01t *19/04*; **H01j** *37/08*

U.S. Cl. 317—2 F **11 Claims**



The present invention deals with ion producing means for the treatment of atmospheric air and like gaseous media environments and the like, and more specifically refers to an air treatment system through ionization in rooms, enclosures and the like. The creation of small ions as chosen unipolar carriers takes place in predetermined concentrations and at relatively high mobility by corona discharge, while ozone generation, nitric oxides and like concomitant formations of this type are reduced to a very negligible and almost no more detectable amount. In producing negative ions through controlled negative high voltage discharge pulses, ozone is also absent in the presence of a relatively high humid atmosphere.

Ion production system pursuant to the invention employs one or more emission needles with electrostatic field or fields established thereabout and preferably parabolic-shaped reflector means rearwardly of the needle or needles and of the same unipolar charge for focusing, accelerating and controlling ion emission conditions. Consequently the invention relates to a system for producing ions in predetermined concentrations, preferably of over 5 sk (propagating capacity) at high mobility k, while substantially suppressing or keeping to a minimum the content of ozone and the like undesirable constituents of atmospheric air.

3,818,270

OVERLOAD INTERRUPT SYSTEMS FOR THREE-PHASE INDUCTION MOTOR

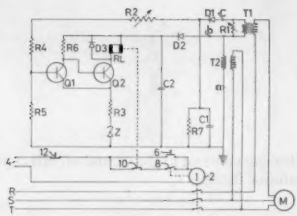
Gil Hagiz, 8 Weizman St., Ramat Hasharon, Israel

Filed Dec. 11, 1972, Ser. No. 313,856

Int. Cl. H02h *7/08*

U.S. Cl. 317—13 R **7 Claims**

An overload interrupt system for three-phase induction motors comprises first means generating a first voltage which is proportional to and in phase with the motor current flowing through a first phase of a power supply to the induction motor, second means generating a second voltage in phase with a voltage between the other two phases of the power supply and of the same order of magnitude of the first voltage under no-load conditions of the motor. A circuit vectorially subtracting



the second voltage from the first voltage to produce a resulting voltage which is approximately proportional to the energy component of the motor current, a switching device controlled by the resultant voltage and a circuit interrupter controlled by the switching device to disconnect the electric motor from the power source.

3,818,271

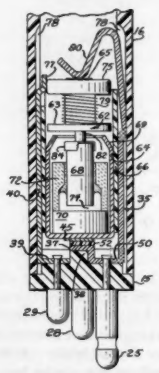
LINE CONNECTOR FOR A COMMUNICATIONS CIRCUIT

Bertram W. Baumbach, Arlington Heights, Ill., assignor to Reliable Electric Company, Franklin Park, Ill.

Filed Mar. 9, 1973, Ser. No. 339,928

Int. Cl. H02h *3/20*

U.S. Cl. 317—16 **10 Claims**

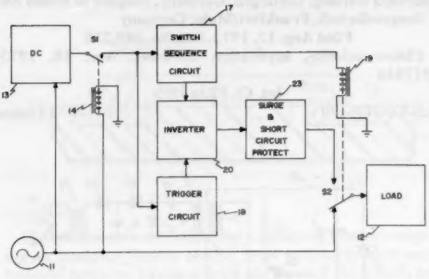


A line protector for a communications circuit comprises a module containing a pair of carbon blocks that provide an air gap in a shunt circuit for grounding high voltage transients. In an overcurrent condition in that shunt circuit, a solder element melts causing contacts in an overcurrent shunt circuit to engage and ground the line. The protector also has an overcurrent responsive mechanism comprising a heat coil for melting the solder element. The heat coil is wound on a bobbin that constitutes one of the contacts in the overcurrent shunt circuit. The bobbin is telescoped with a pin that abuts a cap that engages one of the carbon blocks. The solder element secures the bobbin contact against movement relative to the pin except upon melting of the solder element.

3,818,272
AUTOMATIC SWITCHING AND SHORT CIRCUIT PROTECTION CIRCUIT

Gerald C. Rich, Santa Cruz, Calif., assignor to Rich Laboratories, Inc., Santa Cruz, Calif.

Filed Nov. 15, 1972, Ser. No. 306,740
Int. Cl. H02h *7/14*
U.S. Cl. 317—20 **18 Claims**



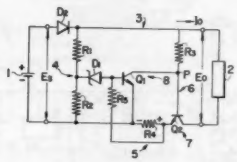
A circuit for use with standby power systems requiring automatic starting. One portion of the circuit is for use with silicon controlled rectifier (SCR) inverters and another portion is more general in nature, for use with loads requiring high initial starting current, or presenting short circuits. The circuit provides for recycling and restart in the event of commutation failure in the SCR inverter and recycles automatically and remotely. Commercial power failure produces switching which places a DC power source on a trigger circuit and a switching sequence circuit. The switching sequence circuit provides a low impedance connection from the DC power source to the SCR inverter only in the event that proper commutation occurs and no internal SCR inverter faults are present. Inverter output is directed to a load through an instantaneously acting surge and short circuit protection circuit which automatically removes the load from the output of the inverter in the event a load short circuit occurs and also limits high surge current requirements on the inverter by the load which might otherwise cause commutation failure in the SCR inverter. The surge and short circuit detection circuit automatically connects the load back to the inverter output after a predetermined period of time once having made a disconnection. The circuit ensures proper functioning of the SCR inverter in spite of temporary internal inverter or external load faults by recycling the inverter start until proper commutation occurs and by recycling the load connection until normal load conditions exist.

3,818,273
BARRIER ISOLATOR DEVICE EMPLOYING AN OVERLOAD PROTECTION CIRCUIT

Tatsunari Nakashima, and Susumu Ohta, Tokyo, both of Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan

Continuation of Ser. No. 236,691, March 21, 1972, abandoned. This application Jan. 22, 1973, Ser. No. 325,376
Claims priority, application Japan, Mar. 26, 1971, 46-18284
Int. Cl. H02h *3/38*
U.S. Cl. 317—22 **18 Claims**

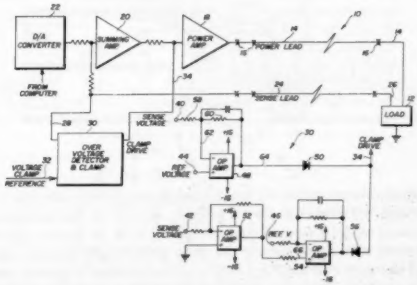
A barrier isolator device is disclosed for interconnecting a voltage source in a safe area, a load (such as a sensing element) in a hazardous area, and a load-associated device (such as a recorder) in a safe area. The barrier isolator device includes an overload protection circuit arranged to transmit signals between the load and the load-associated device, a first isolating circuit connecting the voltage source with the overload protection circuit, and a second isolating circuit connecting the load-associated device with the overload protection circuit. The protective circuit is characterized by low voltage losses in normal operation, low power consumption in a fault condition, and automatic resetting. The protective circuit comprises a current control means, such as a transistor, in series with the load and controlling the current flowing through the load by varying its conductivity. A current detection means, such as a low valued resistor, is connected in series with the load to detect the predetermined limiting value of current, and a voltage detection means, such as a resistive voltage divider, is connected parallel to the voltage source for detecting the predetermined limiting value of voltage. The current control means is arranged to be responsive to the current and voltage detection means to react to either a current or voltage overload condition by reducing its conductivity to limit current flow through, and voltage across, the load. Under normal conditions the current control means inserts a conducting transistor's collector-emitter circuit in series with the load, and the current detecting means inserts a low valued resistor in series with the load, and hence the overload protection circuit introduces only a small series voltage loss. The voltage detecting means places large valued resistors in parallel with the voltage source, and any bias voltages provided to the current control means by the voltage source can be supplied through similar large valued resistors, and hence there is little power consumption during a voltage overload condition. The current control means and the voltage and current detection means are arranged to automatically restore themselves when overload conditions vanish. Accordingly, the overload protection circuit is highly suitable for use in intrinsically safe circuitry arranged to prevent excess energy from entering a hazardous environment, such as an explosive environment.



3,818,274
REMOTE SENSING VOLTAGE CLAMPING CIRCUIT

Maurice J. DeWitte, Elmhurst, and Gerald L. Wojciechowski, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 29, 1973, Ser. No. 345,925
Int. Cl. H02h *9/04*; **G05f** *1/00*
U.S. Cl. 317—31 **8 Claims**



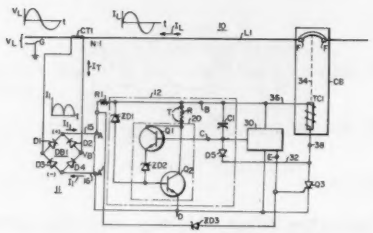
Apparatus for sensing the actual voltage at a load circuit remotely located from its power source and clamping the

power source output level to prevent overvoltage levels at the remote load, including a high impedance sensing lead and a detector-clamping circuit coupled intermediate the sensing lead and the power source. The detector responds to attempts of the voltage level at the remote load to exceed the overvoltage level so as to actuate a drive signal and clamp the power source output.

3,818,275
CIRCUIT INTERRUPTER INCLUDING IMPROVED TRIP CIRCUIT USING CURRENT TRANSFORMERS

Alan B. Shimp, Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1973, Ser. No. 327,973
Int. Cl. H02h *7/20*
U.S. Cl. 317—33 **18 Claims**

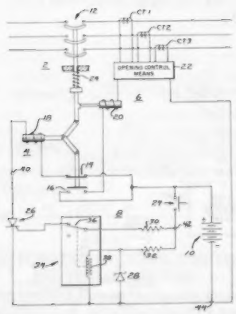


A circuit breaker having an improved tripping system including a current transformer of the non-saturating type for coupling current in a line to be protected through a bridge network to an electrical circuit. The electrical circuit performs the dual functions of monitoring the output signal from the bridge circuit to determine if a time delayed tripping action should be performed and of providing energy to the trip coil of the circuit breaker for causing actuation thereof at the appropriate time. The previously mentioned dual function circuit has the characteristics of only monitoring the signal from the bridge before tripping is initiated and not supplying any energy to the trip coil and only supplying energy to the trip coil after tripping is initiated and not monitoring any signal from the bridge.

3,818,276
CIRCUIT BREAKER ANTIPUMPING CONTROL SYSTEM

David F. Jacobs, Bethel Park, Pa., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 17, 1972, Ser. No. 272,473
Int. Cl. H02h *1/04*
U.S. Cl. 317—54 **4 Claims**

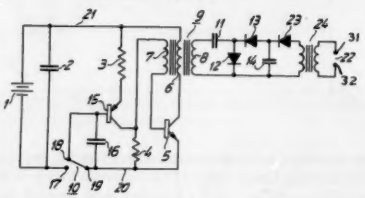


An antipumping circuit breaker control system is provided in which a static switch causes a circuit breaker closing operation in response to closing of a manually operated close switch. A switch means is provided for momentarily providing an energizing circuit to the static switch so that it conducts to cause the closing operation and then opening the energizing circuit to the static switch and holding the energizing circuit open until the manually operated close switch is released.

3,818,277
START DEVICE FOR BATTERY IGNITER

Eberhard Gersing, Gottingen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 17, 1973, Ser. No. 389,250
Claims priority, application Germany, Apr. 10, 1973, 2317940
Int. Cl. F23g *3/00*
U.S. Cl. 317—79 **3 Claims**

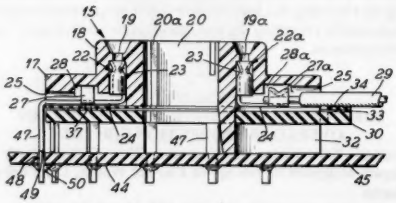


An electronic starting circuit including a battery for igniting a lighter. The circuit includes a spark discharge gap for igniting the gas of the lighter. The circuit itself includes an oscillating transformer having a feedback branch and a transistor voltage converter followed by a rectifier to which is coupled a storage capacitor which in turn feeds the spark gap through an ignition transformer.

3,818,278
TUBE SOCKETS FOR USE WITH PRINTED CIRCUIT BOARDS

Harold J. Adler, Skokie, Ill., assignor to Alcon Metal Products, Inc., Chicago, Ill.

Filed Aug. 7, 1972, Ser. No. 278,587
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **12 Claims**



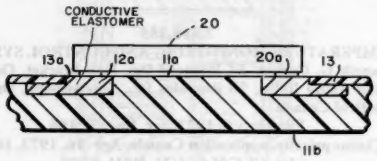
Tube sockets, such as for cathode ray tubes, have contacts provided with tail terminals arranged to extend through printed circuit boards for direct soldered connection to the printed circuit. Thereby the circuit board and socket become a unit for removable attachment to the pins of the CRT. Either a grounding ring is provided in the socket with a grounding terminal projecting in the opposite direction from the tail terminals, or spark gaps may be provided for on the printed circuit board or on a substrate board applied to the tails. Resistors and capacitors as required may be connected in the printed circuit.

3,818,279

ELECTRICAL INTERCONNECTION AND CONTACTING SYSTEM

Richard E. Seeger, Jr., Topsfield, and William J. Lynn, Groveland, both of Mass., assignors to Chromerics, Inc., Woburn, Mass.

Filed Feb. 8, 1973, Ser. No. 330,682
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CM 12 Claims



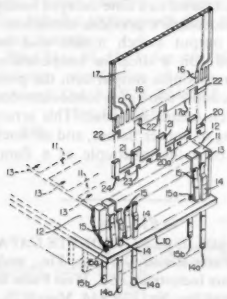
Electrical interconnection and contacting system comprising an insulator flexible plastic, most preferably elastomeric material substrate having at least one layer of electrically conductive elastomeric material embedded therein. The present invention is useful in coupling integrated circuits or the like together or to other circuitry.

3,818,280

PRINTED CIRCUIT CONNECTOR AND KEYING STRUCTURE

Willis R. Smith, and Leonard J. Kure, both of Rochester, N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed May 23, 1973, Ser. No. 362,964
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH 8 Claims



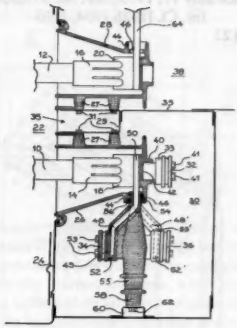
A printed circuit connector is provided comprising a plurality of open-topped channels having an array of spring fingers therein adjacent one side of each channel. Some of the spring fingers include integral portions extending transversely across the bottom of the channel toward the other side of the channel. An elongated keying structure is removably locked within the channel, adjacent the spring fingers, to assure that only a preselected circuit board may be inserted into the channel sufficiently far to make electrical contact with the spring fingers. The lower edge of the keying structure is notched to straddle the transverse spring finger portions, and to engage the bottom of the channel between said transverse portions, thereby to transfer forces imposed upon the keying structure, open insertion of a printed circuit board, away from said transverse portions and directly to the bottom of the channel.

3,818,281

BUS BAR AND STATIONARY DISCONNECT CONTACT ASSEMBLY FOR DRAW-OUT SWITCHGEAR

Jean-Yves Ferton, and Georges Vento, both of Grenoble, France, assignors to Merlin Gerin Societe Anonyme, Grenoble, France

Filed Nov. 30, 1972, Ser. No. 310,854
Claims priority, application France, Dec. 9, 1971, 71.44332
Int. Cl. H02b 1/04
U.S. Cl. 317—103 3 Claims



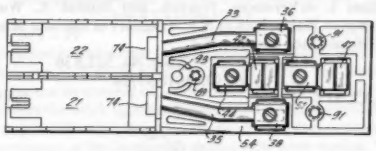
A bus bar and stationary disconnect contact assembly for three-phase draw-out switchgear having standardized insulating shells housing the stationary disconnect contacts and standardized moulded insulating parts to support hte triangularly disposed bus bars and the connecting conductors thereof in a manner ensuring high compactness and excellent mechanical resistance to electrodynamical forces. The shells and the other parts are readily accessible and can easily be mounted and disassembled.

3,818,282

ELECTRICAL PANEL BOARD WITH GROUND AND NEUTRAL PLUG-IN BUSES

Aldon L. Buxton, Stone Mountain; Leonard Donnerstag, Atlanta, both of Ga., and Carl E. Gryctko, Haddon Heights, N.J., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Continuation of Ser. No. 181,696, Sept. 20, 1971, abandoned. This application Jan. 22, 1973, Ser. No. 325,871
Int. Cl. H02b 1/20
U.S. Cl. 317—119 13 Claims



A very flexible electric service panel for temporary hookups is constructed to receive plug-in circuit breakers for direct wiring, as well as four prong receptacle type plug-in power outlet fittings for making cord set connections. The power outlet fitting is constructed by utilizing a hook-like member to mechanically hold a subassembly and a receptacle together as a unitary structure. The subassembly consists of two single pole circuit breakers stacked side by side. The receptacle is

adjacent to the load end of the subassembly and electrically connected to the load terminals of the breakers. Plug-in type neutral and grounding connectors at the rear of the receptacle engage forwardly extending legs of neutral and ground busses in the service panel, as plug-in line terminals of the breakers engage energized stabs in the service panel.

3,818,283

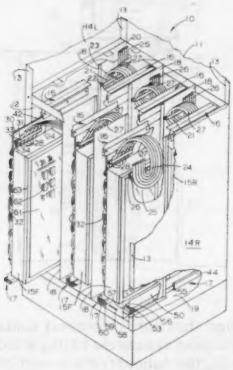
CROSSBAR SWITCH MODULE CABINET INSTALLATION

Lloyd G. Ward, 3142 Lariat Dr., Garland, Tex. 75042

Filed July 17, 1973, Ser. No. 379,933

Int. Cl. H02b *1/04, 1/20*

U.S. Cl. 317—122 **18 Claims**



A crossbar switch module box installation with a plurality of the module boxes mounted by slides in a cabinet for slide out access to crossbar switches during installation, test and maintainance. Module boxes are mounted in back to back relation to be slid in and out from the front and back of the electronic switch control cabinet and for maximum packaging density. Plug in connector equipped pendant cables are so installed as to facilitate the maximum packaging density slide in and out module box installation with the pendant cables looped up and over from their plug-in connectors with adequate slack to accomodate the sliding in and out of respective module boxes. The cables extend to and are looped through a cable clamp that tightly clamp holds the cables from a module box in place with a desired cable non-flexing bend to extend upward in the cabinet to electronic equipment thereinabove.

3,818,284

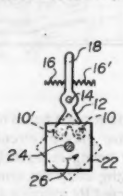
VALVE CONTROL WITH PULSE WIDTH MODULATION

William I. deVersterre, Warren, and Donald A. Worden, Pompton Plains, both of N.J., assignors to Marotta Scientific Controls, Inc., Boonton, N.J.

Filed Dec. 7, 1972, Ser. No. 312,830

Int. Cl. H01h *47/24*

U.S. Cl. 317—124 **29 Claims**



This control, intended primarily for valve actuation, provides signals with pulse width modulation. The frequency of the pulse is high enough to produce dither in the controlled valve or other mechanical element; this being an effective way of making the operation of a mechanical element more delicate by reducing or eliminating static friction. The pulses are obtained by a mechanical shield that intercepts a supply of radiant energy and the width of the pulse is controlled by moving a non-circular shield further into or out of the path of the radiant energy. Rotating plates are used as the shield; and the path of radiant energy is from a source on one side of the plate to a receiver on the other side of the plate; the source and receiver being carried by the same bifurcated lever.

3,818,285

TEMPERATURE MONITORING AND CONTROL SYSTEM

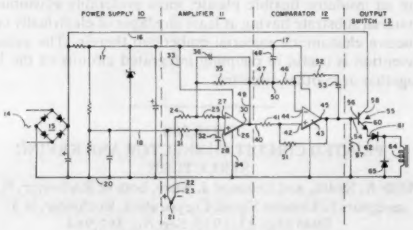
Kenneth G. Carson, 54 Wilstead Dr., New Market, Ontario, and Andre Rekai, 50 Romulus Dr., Scarborough, Ontario, both of Canada

Filed July 6, 1973, Ser. No. 377,168

Claims priority, application Canada, Apr. 16, 1973, 168858

Int. Cl. G05d *23/22*; **H01h** *47/26*

U.S. Cl. 317—133.5 **10 Claims**



An electronic control system for monitoring of temperature, and the control of a system that uses a thermocouple as a temperature sensor. The thermocouple voltage is first amplified and then compared to a time delayed voltage representative of the thermocouple's previous condition. On a rising temperature, the output switch means and load are immediately operated. On a drop in temperature, the comparison of the thermocouple output with the previous condition of the thermocouple allows for immediate deenergization of the output switch means and load. This arrangement has utility in monitoring of burner flames, and advances the art by allowing the use of a thermocouple as a flame safeguard device.

3,818,286

ANODE FOR SOLID ELECTROLYTE CAPACITOR

Ernest D. Ganz, Palm Beach Gardens, Fla., assignor to National Components Industries, Inc., West Palm Beach, Fla.

Continuation of Ser. No. 238,844, March 28, 1972, abandoned. This application Oct. 1, 1973, Ser. No. 401,976

Int. Cl. H01g *9/05*

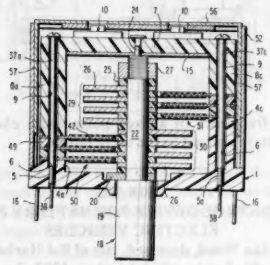
U.S. Cl. 317—230 **7 Claims**

An anode for a solid electrolytic capacitor, said anode comprising a cylinder formed of two parts made of the same valve metal but having different densities.

3,818,287
VARIABLE CONDENSER

Takashi Shirakawa, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1972, Ser. No. 301,909
Int. Cl. H01g *5/38*
U.S. Cl. 317—253 **7 Claims**

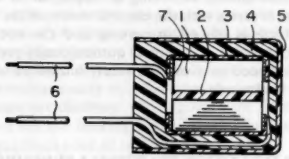


A variable condenser has a stator, a plurality of pole braces for the stator, electrode plates having a hole at a projection thereof for receiving the pole braces of the stator. A synthetic resin film coats both surfaces of the electrode plates excluding the projection so that the size of the film depends upon the size of the electrode plates. A rotor shaft, and spacers, are carried by the condenser and the film is cut out adjacent the rotor shaft and the spacers contact the film. Thus, the pole braces of the stator are simply mounted to the capacitor.

3,818,288
CAPACITOR WITH FLAME INHIBITING CORE

Kurt Wenzel, Vienna, Austria, assignor to Telephon-und Telegraphen-Fabriks Aktiengesellschaft Kapsch & Sohne in Wien, Vienna, Austria

Filed May 31, 1973, Ser. No. 365,726
Claims priority, application Austria, May 31, 1972, 4695/72; Germany, Oct. 3, 1972, 2248485
Int. Cl. H01g *1/11*
U.S. Cl. 317—258 **5 Claims**

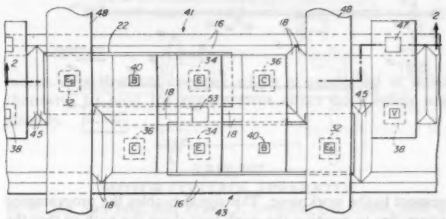


A roll-type capacitor includes a roll made of strip-shaped metal electrodes and plastic foils arranged as a dielectric between the electrodes and is surrounded by an envelope of plastic embracing the periphery of the roll. The envelope consists of thermally shrinkable material and contacts the roll under elastic stress. The envelope material may be e.g., polyvinylchloride, that releases flame-inhibiting gases, in particular chlorine, when heated. The roll has a core consisting of a material that releases flame-inhibiting gases when heated. The envelope may consist of a layer or a plurality of layers of a self-sealing shrinkable foil.

3,818,289
SEMICONDUCTOR INTEGRATED CIRCUIT STRUCTURES

John L. Mudge, Los Altos; Jerry W. Zimmer, Mountain View, and Keith G. Taft, Ben Lomond, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 10, 1972, Ser. No. 242,534
Int. Cl. H01l *19/00*
U.S. Cl. 357/49 **9 Claims**



A semiconductor integrated circuit having microminiature active and/or passive elements in which a crystallographic surface of a semiconductor body lies in the crystallographic plane and anisotropically etched regions with sloped crystallographic surface walls isolate adjacent semiconductor elements and/or define the boundaries of junctions and/or resistance regions formed in an epitaxial layer of said semiconductor body. The structure enables a subsurface region of the epitaxial layer to act as the dispersed collector of a transistor having a plurality of emitters and a subsurface epitaxial resistance interconnecting collector regions under different emitters such that one of the emitters acts with the collector and base as a transistor fed from a power supply through a relatively low resistance while the other emitter acts with the common base and a portion of the collector fed from the relatively high epitaxial resistor region beneath the base region to form a relatively low current drain transistor/resistor combination. A plurality of such transistors are cross coupled such that the transistors with high resistances in their collector circuits act as a latching multivibrator and the transistors with the low resistances in their collector circuits act as signal coupling transistors.

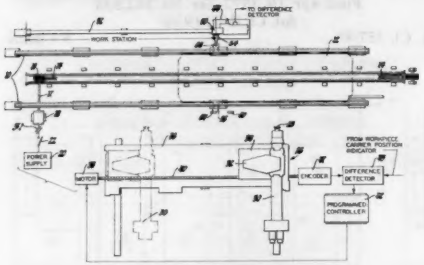
3,818,290
POSITION COMPENSATOR FOR A PROGRAMMED WORK DEVICE

Ernest V. Harper, Utica, and Richard W. Yasenchak, Farmington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 132,063, April 7, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,793
Int. Cl. G05b *19/24*
U.S. Cl. 318—39 **7 Claims**

A position compensator for a program controlled work tool which is movable along a path in a work station for compensating for the movement of a workpiece through the work station so that the work tool may perform preprogrammed operations at prescribed locations on the workpiece independent of the movement of the workpiece through the work station. The position compensator includes a tracking member mounted on a track adjacent the work station. The tracking member includes a lock lever which is actuated to engage a gate lock on the workpiece carrier as it enters the work station. The tracking member is thereafter moved down the track by the gate lock as the workpiece carrier moves through the work station. A first encoder is positioned by the movement of the tracking member so as to generate a signal which is directly related to the position of the workpiece carrier in the work station. A second encoder is positioned by the movement of the

work tool along the path in the work station so as to generate a signal which is directly related to the position thereof along the path. These two signals are received by a difference detector which generates and supplies to a programmed controller a signal which represents the position of the work tool with



respect to the workpiece. This signal enables the programmed controller to position the work tool along the path so that the work tool may perform preprogrammed operations at predetermined locations on the workpiece as if the workpiece were in a stationary and precisely fixed position.

3,818,291

OPERATING SYSTEM FOR ELECTRICALLY DRIVEN VEHICLES

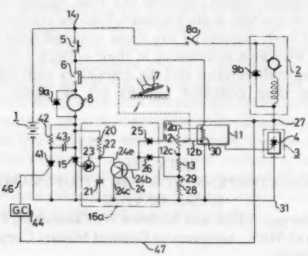
Hiroyuki Miyake, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Continuation-in-part of Ser. No. 119,742, March 1, 1971, abandoned. This application Nov. 9, 1972, Ser. No. 305,162

Claims priority, application Japan, Mar. 9, 1970, 45-19891; Mar. 9, 1970, 45-19894

Int. Cl. H02p *5/16*

U.S. Cl. 318—139 **7 Claims**



An operating system for an electrically driven vehicle, for example a fork-lift truck, of the type that has an electric motor connected to a DC source via a chopper circuit. The system includes a thyristor serially connected in the control circuit for said system and a transistorized detector circuit which senses the normal operation of the chopper circuit, the accelerator pedal transducer and the accelerator switch, and makes the thyristors non-conductive in the event of malfunctioning.

3,818,292

ELECTRONIC ACCELERATOR CONTROL FOR ELECTRIC VEHICLE

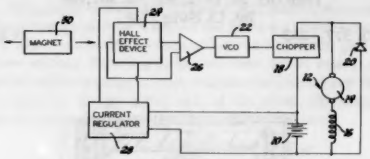
Alby M. Berman, Oak Park, Mich., assignor to Energy Development Association, Madison Heights, Mich.

Filed Nov. 17, 1972, Ser. No. 307,686

Int. Cl. H02p *5/16*

U.S. Cl. 318—139 **12 Claims**

A vehicle powered by a storage battery employs a foot pedal which adjusts the position of a permanent magnet relative to a Hall effect device. The voltage output from the Hall effect device, a non-linear function of the magnet position, is used to



control the frequency of a fixed pulse width chopper which applies a battery current to the drive motor.

3,818,293

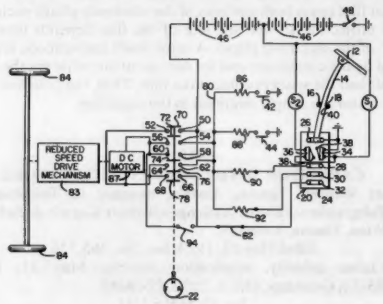
SPEED CONTROL DEVICE FOR BATTERY POWERED ELECTRIC VEHICLES

Philip Sheridan Wood, deceased, late of Bal Harbour, Fla., and by Garlin W. Lewis, administrator, 4302 San Amaro Dr., Coral Gables, Fla. 33146

Substitute for Ser. No. 815,776, April 14, 1969, abandoned. This application Mar. 6, 1973, Ser. No. 334,452

Int. Cl. H02p *5/08*

U.S. Cl. 318—139 **4 Claims**



A resistance speed control for a battery driven electric vehicle, such as a golf cart. A combination of solenoid switching and a direct mechanical switching is employed to vary the total resistance in series with the electric motor of the vehicle. When the vehicle is placed in reverse and the accelerator pedal is fully depressed, the control automatically produces a slow backward speed to avoid the safety hazard of unexpectedly lurching backwards.

3,818,294

DEVICE FOR INDUCTION STARTING A SYNCHRONOUS MOTOR AND PULLING IT INTO SYNCHRONISM

Vasily Pavlovich Glukhov, ulitsa Raunas, 43, kv. 37; Valery Andreevich Maiorov, ulitsa Menes, 10, kv. 23, and Alexandr Alexandrovich Sviridov, ulitsa Kirova, 10, kv. 2, all of Riga, U.S.S.R.

Filed Feb. 13, 1973, Ser. No. 332,193

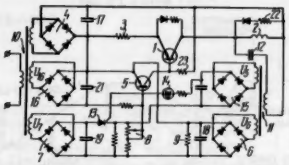
Int. Cl. H02p *1/46*

U.S. Cl. 318—174 **3 Claims**

The present invention relates to a device for induction starting and pulling into synchronism of a synchronous motor.

The device, comprising in the motor field winding and connected to the power mains a rectifying bridge and a semiconductor triode, controlled by another semiconductor triode, to the emitter-base junction of which are connected two rectify-

ing bridges comprising a comparison circuit, one of said bridges generating a voltage proportional to the slippage e.m.f., while the other bridge, a voltage proportional to the mains e.m.f. The comparison circuit includes a controlled



diode, tripping with high rotor slippage speeds the voltage circuit proportional to the mains e.m.f, and a Zener diode is connected to the control electrode of this diode for energizing the latter at the required moment.

3,818,295

APPARATUS AND METHOD FOR CONTROL OF SINGLE-PHASE A-C MOTORS

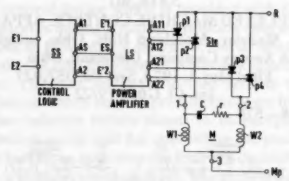
Herbert Poppinger, Munich, and Gottfried Reger, Freising, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed July 12, 1972, Ser. No. 270,926

Claims priority, application Germany, July 15, 1971, 2135324

Int. Cl. H02p *1/42*

U.S. Cl. 318—207 B **15 Claims**



Control apparatus for controlling the direction of rotation of an a-c motor having two stator windings with a reactance element therebetween, and for electrically braking same. The control apparatus responds to input signals to apply a-c power to the stator windings to actuate the motor to rotate in a direction dependent on the input signal present. The apparatus responds to removal of all input signals to apply d-c power simultaneously to both stator windings to brake the motor. Means are disclosed which govern the duration and magnitude of the d-c braking power. During braking, the control apparatus blocks out all spurious inputs.

3,818,296

REGENERATIVE BRAKING CONTROL DEVICE FOR AN ELECTRIC CAR

Yasunosuke Torii, Tokyo-to, Japan, assignor to Tokyo Shibaura Electric Company Ltd., Kawasaki-shi, Kanagawa-ken, Japan

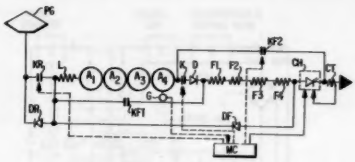
Filed May 19, 1972, Ser. No. 254,944

Claims priority, application Japan, May 25, 1971, 46-35805; May 25, 1971, 46-35806

Int. Cl. H02p *5/16*

U.S. Cl. 318—247 **3 Claims**

A series D.C. electric motor is employed for the drive of an electric car, the field winding of which is connected in parallel with the armature of the motor while a regenerative brake is being made. The field winding has its excitation controlled by



means of a thyristor chopper which is connected in series therewith to hold the regenerative effect both safely and steadily.

3,818,297

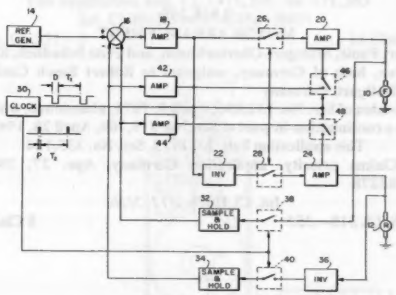
MOTOR CONTROL APPARATUS

In W. Ha, San Jose, and Frank J. Sordello, Los Gatos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 2, 1973, Ser. No. 329,055

Int. Cl. H02p *5/16*

U.S. Cl. 318—331 **23 Claims**



Motor control apparatus is provided in accordance with the teachings of the present invention wherein a motor control signal proportional to the difference between desired motor speed and actual motor speed is supplied to the motor. Interrupting means is provided to periodically interrupt the supply of said control signal to said motor whereby an IR voltage drop attributed to the current effectively stored in the motor windings, a $-L\,di/dt$ voltage component responsive to the interruption of said control signal and a back EMF component responsive to the inertial operation of said motor are induced in the motor. Forced relaxation means is coupled to the motor for decreasing the effective relaxation time thereof to dissipate the IR voltage drop and $-L\,di/dt$ voltage component at a rate that exceeds the intrinsic rate of decay of the motor. Once the IR voltage drop and $-L\,di/dt$ voltage component are sufficiently dissipated, the back EMF component induced in the motor is sampled, which back EMF component is representative of actual motor speed.

3,818,298

SERIES A.C. COMMUTATOR MOTOR WITH STABILIZED SPEED

Ivar Eriksson, Linkoping, Sweden, assignor to Malte Manson AB, Linkoping, Sweden

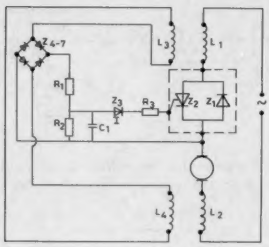
Filed Feb. 27, 1973, Ser. No. 336,231

Int. Cl. H02p *5/16*

U.S. Cl. 318—332 **5 Claims**

An a.c. series commutator motor is fed from the mains, in series with its field winding, the rotor winding and an an-

tiparallel circuit of two diodes. A secondary winding coupled to the field winding, serving as a primary winding, supplies the load responsive voltage induced in the secondary winding to a



control electrode of one of the two diodes via a rectifier and a diac for firing said diode at a certain load limit so as to maintain a constant motor speed independent of variations in the motor load.

3,818,299

MOTOR ARRANGEMENT

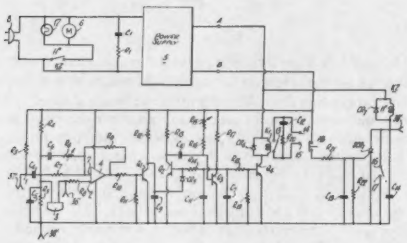
Kurt Paule, Stuttgart-Oberturkheim, and Fritz Schadlich, Stetten, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Division of Ser. No. 132,896, April 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 819,704, April 28, 1969. This application Feb. 23, 1973, Ser. No. 335,124

Claims priority, application Germany, Apr. 27, 1968, 1763278

Int. Cl. H02p *1/12, 5/16*

U.S. Cl. 318—353 **8 Claims**



A motor arrangement, particularly for use in power tools includes a D.C. motor having an armatur winding having two terminals. A rectifier stage converts A.C. voltage into D.C. voltage and has two output terminals. A shunt-field winding has two terminals and is connected across the rectifier output terminals and has one terminal connected to one terminal of the armature winding. A series-field winding has one terminal connected to the other terminal of the armature winding. A diode is connected between the other terminal of the series-field winding and the other terminal of the shunt-field winding with its anode and cathode so connected as to carry in forward diode direction current flowing through said armature winding. A centrifugal switch or time-delay unit is operative for short-circuiting at least part of the series-field winding after the start-up operation of the motor has proceeded to a predetermined extent. The provision of the diode effects a noticeable improvement in the efficiency of the motor.

3,818,300

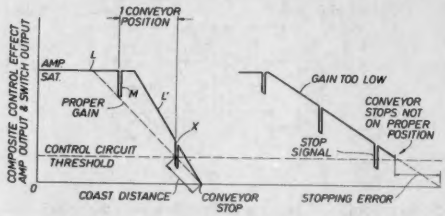
CONVEYOR SERVO MOTOR STOPPING CONTROL UNIT

Larry J. Stroman, 8411 Carvell, Houston, Tex. 77036

Filed Oct. 24, 1972, Ser. No. 300,178

Int. Cl. G05b *13/00*

U.S. Cl. 318—561 **4 Claims**



A self balancing servo system is disclosed for positioning a controlled element at a plurality of discrete positions. Switch means is provided for conducting a mark signal to the servo system when said controlled element is a coast distance from a discrete position, and means is provided for combining the mark signal with an error signal representative of the position of the controlled element with respect to a desired position. When this combined signal is below a certain voltage level, a stop signal is generated and the drive to the controlled element is stopped and the controlled element is permitted to coast to a stop at the desired position. Also, a short route circuit is disclosed for controlling direction of movement of the controlled element, when it is a 360° element such as an endless conveyor.

3,818,301

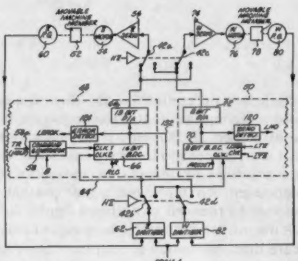
MULTIPLEXED MACHINE CONTROL APPARATUS

Emmett F. Sindelar, Moreland Hills, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed May 3, 1973, Ser. No. 357,027

Int. Cl. G05b *19/22*

U.S. Cl. 318—574 **20 Claims**



A machine control apparatus has several machine members whose positions are to be controlled and has several servomechanism loops for controlling the members. Each servomechanism loop includes a controller, and switching is provided by which the inputs and outputs of the various controllers can be switched to control different ones of the movable machine members. Each controller has a data storage register for storing the instantaneous value of error signal of its servomechanism loop. Upon changeover of a particular member from one controller to another, the error signal data in the storage register of the outgoing controller is transferred to the error storage register of the incoming controller, so that the error signal data remains associated with the member being controlled, and no inaccuracies are introduced into the position of the controlled member.

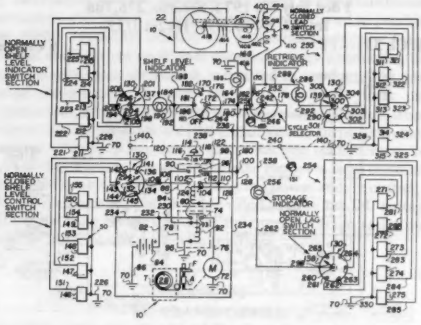
3,818,302
CONTROL APPARATUS FOR A WAREHOUSING SHELF LOCATOR

Melvin C. Rutledge, 410 Park Pl., Fort Lee, N.J. 07524

Continuation-in-part of Ser. No. 849, Jan. 6, 1970. This application May 12, 1972, Ser. No. 252,601

Int. Cl. G05b *19/26*

U.S. Cl. 318—600 **7 Claims**



A method, control device and shelf selector system for governing operating functions in positioning loading devices, such as the fork of a forklift, to load or discharge pallets at shelves of desired preselected levels. The shelf selector system includes a control device which is provided with a carrier assembly apparatus having a multiple position cam selector section operable to move past a sensor section to selectively contact a plurality of cam followers of control switches of the sensor section. The cam followers in turn actuate the control switches, one of which may be preselectively set by an operator-operative selector switch means to de-energize a motor means or motor-pump unit for controlling the position of the fork of the forklift so as to stop the fork at a desired position in relation to a preselected shelf level. The shelf selector system includes, with the control device, a compact operator-operative selector switch means interconnected to the control switches of the sensor section of the carrier assembly apparatus and thereby to forklift controls to govern the position of the fork in relation to selected shelf levels. The selector switch means and control switches may govern other functions in the positioning and rate of speed of the fork of the forklift, as well as serve to selectively effect a load retrieval and a load discharge operation through the positioning of the fork at a reduced rate of speed in relation to the preselected shelf in alternate selected senses.

3,818,303
METRIC CONVERSION DEVICE FOR NUMERICAL CONTROL OF MACHINE TOOLS

Peter Rossel, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

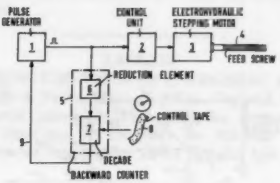
Filed Oct. 18, 1971, Ser. No. 190,348

Claims priority, application Germany, Oct. 20, 1970, 2051305

Int. Cl. G05b *19/28*

U.S. Cl. 318—603 **4 Claims**

In a numerical machine tool control the control pulses are fed in parallel to an electrohydraulic stepping motor and a presettable backward counter. The null signal of the counter stops the motor. In order to be able to preset the counter in



inches with a travel increment of 0.004 inch, the first "-decade" of the counter is modified to form a reduction at the ratio of 1 to 2.5.

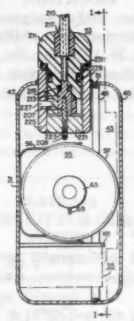
3,818,304
THERMOELECTRIC GENERATOR

Thomas P. Hursen, Monroeville; Steve A. Kokenik, Leechberg, and David L. Prudy, Indiana, all of Pa., assignors to Arco Nuclear, Leechburg, Pa.

Continuation of Ser. No. 827,187, May 23, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,383

Int. Cl. H02m *3/32*; **H05g** ; **H01v**

U.S. Cl. 321—2 **11 Claims**



A heat-to-electricity converter is disclosed which includes a radioactive heat source and a thermoelectric element of relatively short overall length capable of delivering a low voltage of the order of a few tenths of a volt. Such a thermoelectric element operates at a higher efficiency than longer higher-voltage elements; for example, elements producing 6 volts. In the generation of required power, thermoelectric element drives a solid-state converter which is controlled by input current rather than input voltage and operates efficiently for a high signal-plus-noise to signal ratio of current. The solid-state converter has the voltage gain necessary to deliver the required voltage at the low input of the thermoelectric element.

3,818,305
APPARATUS AND CIRCUIT FOR PROVIDING VOLTAGE TO FOCUS ANODE

Christ J. Dumas, Forest View, Ill., assignor to American Plasticraft Company, Chicago, Ill.

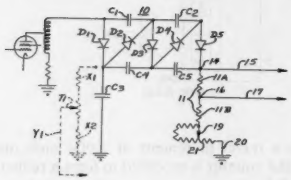
Filed Oct. 2, 1972, Ser. No. 294,285

Int. Cl. H02m *3/22*

U.S. Cl. 321—2 **5 Claims**

This invention refers to an improved assembly providing a voltage to the focus anode of a cathode ray tube wherein

susceptibly of arc damage to the associated electronic circuitry is minimized by providing means for dissipating the arc-



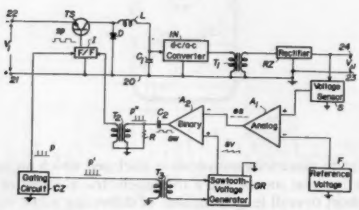
ing energy and wherein full tracking of the focus anode voltage with the high voltage supply is obtained.

3,818,306

STABILIZED POWER SUPPLY WITH TRANSFORMER ISOLATION

Roberto Marini, Milan, Italy, assignor to Societa Italiana Telecomunicazioni Siemens s.p.A., Milan, Italy

Filed Feb. 20, 1973, Ser. No. 333,744
Claims priority, application Italy, Feb. 18, 1972, 20728/72
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **3 Claims**



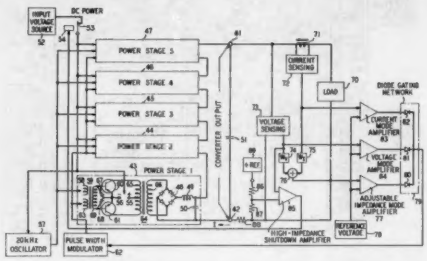
A storage capacitor, periodically charged through a chopping transistor via an inductance which during cutoff of the transistor maintains the flow of charging current by way of a diode, energizes an output terminal through a d-c/a-c converter, a transformer and a rectifier in tandem therewith. A sensor responsive to the voltage (or current) on that terminal feeds one input of an analog-type first differential amplifier whose other input receives a constant reference voltage (or current) and whose output constitutes an error signal. A binary-type second differential amplifier compares this error signal with the output of a sawtooth-wave generator and, on detecting a coincidence therebetween, energizes a differentiation circuit which generates a turn-on pulse for the switching transistor; a turn-off pulse for that transistor is periodically produced by a gating circuit which also triggers the sawtooth-wave generator. Two pulse transformers galvanically separate the gating circuit and the switching transistor from the sawtooth-voltage generator and the associated amplifier and differentiation circuit.

3,818,307

SERIALLY-CONNECTED CONVERTERS HAVING MULTIPLE REGULATION MODES FOR USE IN SUPPLYING SERIALLY-CONNECTED LOADS ON LONG LINES

Billy Harold Hamilton, Summit; John Robert Meszar, Parsippany; Roman Ostapiak, Pine Brook; Robert Edward Schroeder, Parsippany, and Peter Pentti Untamo, Branchburg Twp., Somerset County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 31, 1972, Ser. No. 276,708
Int. Cl. H04b *3/58;* **H02m** *3/32*
U.S. Cl. 321—11 **6 Claims**



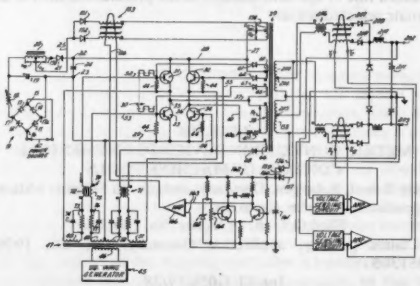
These serially connected converters have multiple regulation modes including a new normal mode in which the current-versus-voltage characteristic has a substantial negative slope. This mode produces better load sharing among the serially connected converters than would a constant-current mode of operation and provides more stable operation of the remote repeaters serially supplied along a communication line by the converters than would a constant-voltage mode of regulation of the converters, especially in the presence of disturbances on the line. In the event that a converter is turned on into a line presenting an abnormally high load impedance, the converters are shut down. In the dual-line communication link, the neutral point at the floating end is grounded in the presence of sufficient voltage inbalance and then is ungrounded when the line currents are near balance.

3,818,308

INVERTING BRIDGE CIRCUIT

Mordechai I. Tamari, Mineola, N.Y., assignor to Electronic Measurements, Inc., Neptune, N.J.

Filed Oct. 20, 1972, Ser. No. 299,358
Int. Cl. H02m *3/32*
U.S. Cl. 321—13 **14 Claims**



A power inverting bridge circuit for a highly regulated direct current power supply to provide high efficiency and in-

creased current handling capacity. The inverting bridge circuit includes at least one pair of series-connected gate elements, preferably power transistors, connected across the leads of a DC power source and having a series-connection point between the gate elements defining one bridge output point. An alternating current path is provided between each power source lead and a second bridge output point. The primary coil of a transformer is connected across the two bridge output points. The gate elements are controlled by a high frequency square-wave generator to produce an alternating current in the primary coil of the transformer. A high frequency alternating current signal is produced in the transformer secondary coil which is easily rectified and filtered to produce the highly regulated output. An anti-crossconduction transformer ensures that each gate element ceases conducting before the other gate element is permitted to conduct. The anti-crossconductiontransformer includes feedback from the transformer to the gate elements anti-crossconduction transformer ensure the gates are not overdriven by the square-wave generator. In addition, anti-crossconduction transformers are included to prevent the switching gate elements from conducting at the same time. For regulating the power supply output, a DC source boosting circuit is provided to raise the DC voltage to the inverting bridge circuit as the output voltage varies due to load or AC power source fluctuations.

3,818,309

DC TRANSFORMER

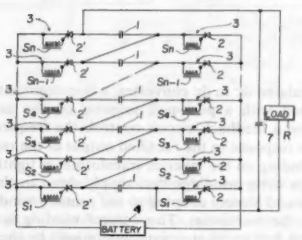
Masahide Ichikawa, No. 13-11 Honjo 1-chome, Tokyo, Japan (130)

Filed Aug. 28, 1972, Ser. No. 284,369

Claims priority, application Japan, Sept. 21, 1971, 46-73715; Sept. 21, 1971, 46-73716; Oct. 15, 1971, 46-81429

Int. Cl. H02m *7/00*

U.S. Cl. 321—15 **9 Claims**



A DC transformer converts DC voltage by employing multiple charging circuits formed by connecting charging semiconductor elements, such as diodes and thyristors, in series to opposite ends of a condenser, and DC low voltage is applied to opposite input terminals of all the charging circuits connected in parallel to each other. The condensers of all the charging circuits are connected in series with each other between a pair of output load terminals. Gating circuit means are operable to trigger conductive both semi-conductor devices of each charging circuit to charge the associated condenser to the voltage of a low voltage source and, with all condensers charged to the voltage of the source, to impress the sum of the voltages of all condensers between the output load terminals. In the first embodiment of the invention, the charging circuits are gated conductive in succession. In a second embodiment of the invention, respective semi-conductor devices, each having a gating electrode, are connected in series between each pair of condensers. The charging circuits are gated conductive simultaneously in alternation with the gating conductive of all of the semi-conductor devices connected in series between pairs of condensers. In a third embodiment of the invention, the charging circuits are arranged to form sets of basic voltage transformation circuits and the application of gating current to the discharging semi-conductor elements is delayed by a slight amount.

3,818,310

SWITCHING CIRCUITS FOR ENERGISING A LOAD

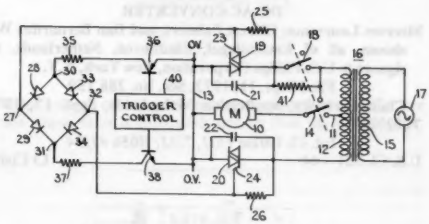
Stephen Clifford Smith, Stoke-on-Trent, England, assignor to International Computers Limited, London, England

Filed Apr. 13, 1973, Ser. No. 350,980

Claims priority, application Great Britain, Apr. 15, 1972, 17475/72

Int. Cl. H02p *7/06*

U.S. Cl. 321—18 **5 Claims**



A switching circuit for energising a load with unidirectional current of either polarity as desired from an a.c. supply includes a pair of triacs connected as a full wave rectifier in which the control electrodes of the triacs are responsive to control currents which are derived from the a.c. supply by a control switch which switches diodes into the control current path so that the control current flows in a direction such that the triac conducts to establish the required current in the load.

3,818,311

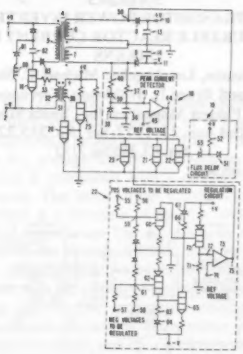
PROTECTIVE CIRCUIT FOR SEMI-CONDUCTOR SWITCH

Gary L. Mattson, Pine Island, and Lawrence P. Segar, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,663

Int. Cl. H02m *7/44*

U.S. Cl. 321—43 **8 Claims**



A clamp circuit for the protection of a semiconductor switch. The circuit has particular value in a stored energy in-

verter. The energy which is not delivered to the secondary winding would normally result in an induced voltage of reversed polarity upon opening the switch connecting the primary winding to the source of electrical energy. This induced voltage adds to the supply voltage to create a high voltage across the switch. Semiconductor switches having limited dissipation ability are protected by connecting an inductance-capacitance resonant circuit across the switch. When the switch is open, the capacitor charges to a voltage of a first polarity. When the switch is closed, a half-cycle of oscillation occurs to reverse the polarity of the capacitor voltage. This stored charge serves to absorb the induced voltage which results from opening the switch, thereby limiting dissipation within the switch during this period.

3,818,312

DC-AC CONVERTER

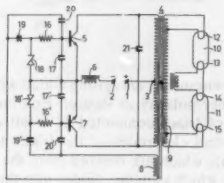
Meerten Luursema; Hilbert Palmers, and Dan Bernardus Wijsboom, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,150

Claims priority, application Netherlands, Sept. 17, 1971, 7112766

Int. Cl. H02m *1/02, 7/52;* **H05b** *41/24*

U.S. Cl. 321—44 **13 Claims**



A DC-AC converter includes a transformer with its primary winding in series with a transistor across the terminals of a DC voltage source. A resistor is connected between the emitter and base of the transistor and a coupling capacitor connects a coupling winding of the transformer to the base of the transistor. An auxiliary DC voltage source is included in the connection between the emitter and the resistor so that the converter is less sensitive to variations in the DC source voltage.

3,818,313

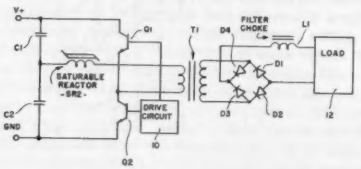
SWITCHED TRANSISTOR POWER INVERTER CIRCUIT WITH SATURABLE REACTOR CURRENT LIMITING MEANS

Allen B. Rosenstein, Los Angeles; Michael C. Stolowitz, Sherman Oaks, and Bruce L. Wilkinson, Torrance, all of Calif., assignors to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed Apr. 23, 1973, Ser. No. 353,225

Int. Cl. H02m *7/52*

U.S. Cl. 321—45 R **4 Claims**



A power inverter circuit is provided which includes a transformer and a pair of switching transistors. The switching transistors connect the primary winding of the transformer to a direct-current source in an alternate manner, so that the polarity of the voltage applied to the winding is cyclically reversed in order to produce an alternating-current in the winding. In accordance with the invention, a saturable reactor is connected in circuit with the switching transistors to prevent each transistor from conducting a relatively large current before the voltage across such transistor drops to a minimum, so that switching losses in power inverter may be reduced.

3,818,314

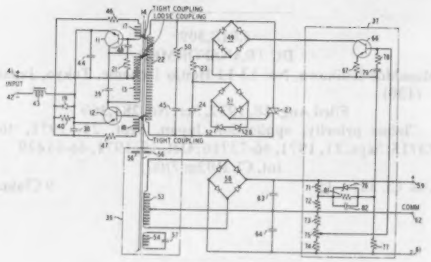
FREQUENCY CONTROLLED INVERTER

John Daniel Bishop, Morris Twp., Morris County; Robert John Kakalec, Madison, and Gerard Edward Miller, West Orange, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 11, 1973, Ser. No. 368,757

Int. Cl. H02m *7/52*

U.S. Cl. 321—45 R **8 Claims**



In a regulated dc to dc converter, a ferroresonant regulator is combined with a push-pull inverter on the same transformer, and a feedback circuit controls the frequency of the inverter in response to the rectified output of the regulator. A control winding on the inverter transformer is tightly coupled to the base drive windings that supply drive to the inverter transistors and loosely coupled to the primary winding that is driven by the transistors. The control winding is short circuited each half cycle at a time determined by the feedback circuit to reflect a low impedance into the base drive windings and a higher inductive impedance into the primary winding. The higher inductive impedance in combination with a capacitor in parallel with the primary winding forms a resonant circuit which insures efficient commutation of the inverter transistors and the control winding short circuiting device.

3,818,315

ELECTRICAL CONVERTER APPARATUS HAVING AN INTEGRATING TYPE CONTROL MEANS FOR DETERMINING FIRING POINTS AND AN END STOP FIRING PULSE CONTROL MEANS

Laszlo Gyugyi, Pittsburgh; Brian R. Pelly, Murrysville, and Eric J. Stacey, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

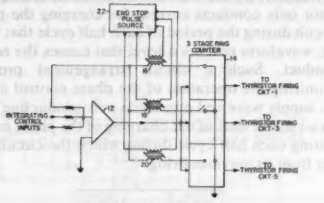
Filed Nov. 22, 1972, Ser. No. 308,894

Int. Cl. H02m *5/30*

U.S. Cl. 321—69 R **5 Claims**

In order to prevent reference voltage variations from producing system malfunctions in converters having an in-

tegrating type firing pulse control system, an overriding end stop firing pulse control is provided that introduces pulses at



prescribed intervals in positive and negative directions to the firing circuits to limit the maximum period within which firing can occur.

3,818,316

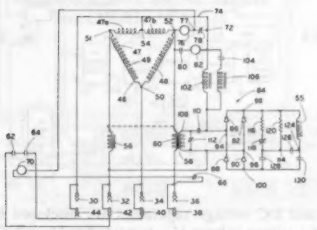
GENERATOR, SYNCHRONOUS MOTOR AND PHASE CONVERTER

Arthur E. Carlson, Newton, Iowa, assignor to Winpower Manufacturing Company, Newton, Iowa

Filed June 8, 1973, Ser. No. 368,203

Int. Cl. H02p *11/00*

U.S. Cl. 322—1 **14 Claims**



An apparatus capable of functioning as a generator, motor, and phase converter. The apparatus includes a single electromechanical transducer, various circuit components, and switching means for interconnecting the circuit components for efficient operation in each mode of operation.

3,818,317

METHOD OF IMPROVING TRANSIENT STABILITY OF SYNCHRONOUS MACHINE

Akira Isono; Mamoru Fukushima, and Hidetaka Hiroyoshi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

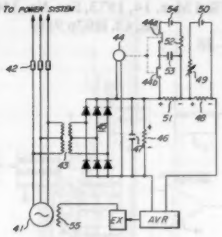
Filed June 27, 1972, Ser. No. 266,659

Claims priority, application Japan, June 30, 1971, 46–48353

Int. Cl. H02p *9/10*

U.S. Cl. 322—21 **4 Claims**

When a fault occurs in an electric power system, a protective relay removes the fault. During this period, an unbalance occurs between the input and output of a synchronous machine and this accelerates or decelerates the synchronous machine. To eliminate this effect within a short period of time and to improve the transient stability of the synchronous machine, it is proposed, during a short period of time following the detection or removal of the fault, to make the direct-current excitation of the synchronous machine stronger than that under the normal operating state. In one form of the method according to the present invention, the so-called automatic voltage regulator is employed, whereby in response to the occurrence or removal of a fault, the excitation of the synchronous machine is increased in such a manner that the



terminal voltage of the synchronous machine is made effective as one whose value is apparently smaller than the actual value.

3,818,318

APPARATUS FOR REGULATING A D.C. VOLTAGE

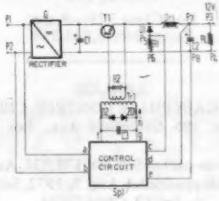
Heinrich Schott, Seebergerstrasse 6a, 8 Munich 71, and Martin Huber, Lorenzstrasse 68, 8 Munich 83, both of Germany

Filed Feb. 22, 1973, Ser. No. 334,576

Claims priority, application Germany, Mar. 27, 1972, 2214930

Int. Cl. G05f *1/56, 1/58*

U.S. Cl. 323—9 **3 Claims**

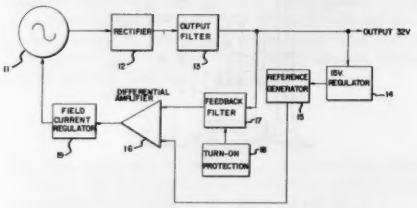


Apparatus for regulating a d.c. voltage appearing across a load. The emitter-collector junction of a transistor is connected in series with a retardation coil and with the load impedance to a d.c. voltage source. The voltage applied to the load impedance is compared with a reference voltage in a regulating circuit. The latter circuit provides an output signal of a value which is a function of the d.c. voltage appearing across the load impedance. The conductivity of the emitter-collector path of the aforementioned transistor is controlled by the latter output signal. An adjustable impedance is connected in series with the primary winding of a transformer and to the voltage source. The secondary winding of the transformer is connected across the base-emitter junction of the aforementioned transistor, and the signal appearing across this winding controls the operation of the transistor. A frequency generator produces a timing signal, which through the regulating circuit, produces an edge of the output signal. The other edge of the output signal is a function of the d.c. voltage appearing across the load impedance.

3,818,319
REGULATOR TURN-ON OVERSHOOT ELIMINATION

John W. Harrell, Duncanville; Bobbie J. Patton, Dallas, and James H. Sexton, Duncanville, all of Tex., assignors to Mobil Oil Corp., New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 340,989
Int. Cl. H02p 9/30
U.S. Cl. 322—28 **5 Claims**



A variable current generator supplies charging current to the feedback filter capacitance during the startup of the regulated voltage generator. The variable current generator is controlled by an auxiliary charging circuit which acts to rapidly charge the capacitance in the feedback filter. This prevents overshoot in the output of the voltage generator upon startup due to a time lag between the voltage at the output of the alternator and the voltage at the input of the feedback amplifier. This time lag is otherwise caused by the time required to charge the capacitance in the feedback filter. However, the auxiliary charging circuit and variable current generator of this invention charge the capacitance thereby eliminating the time lag and preventing overshoot. A circuit turns off the current generator when the output of the alternator reaches its regulated value.

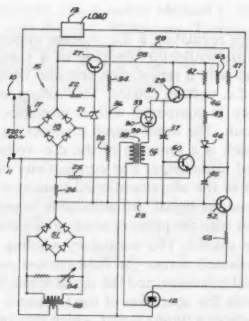
ERRATUM

For Class 323—9 see:
Patent No. 3,818,318

3,818,320
HIGH GAIN PHASE CONTROL CIRCUIT

Mark Schindler, 195 Greenfield Ave., Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 175,931, Aug. 30, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,418
Int. Cl. G05d 23/24
U.S. Cl. 323—20 **7 Claims**

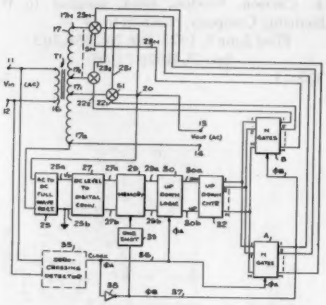


A phase control circuit is provided which includes a zener diode across a full wave rectifier that is used to form a pulsating d.c. waveform each half cycle of an a.c. supply wave being used to supply power to a heating load. The circuit further includes a transistor having its base connected to conduct through the zener diode and its input connected to the output of the rectifier. By the use of such a circuit arrangement the transistor only conducts current for charging the phase control circuit during the period of each half cycle that the pulsating d.c. waveform reaches a level that causes the zener diode to conduct. Such a circuit arrangement provides for synchronizing the operation of the phase control cirucit with the a.c. supply wave and provides a non-conducting interval of time prior to the start of the charging of the phase control curcuit during each half cycle during which the circuit is able to recover from its previous firing.

3,818,321
VOLTAGE REGULATOR

Kurt Willner, Los Angeles, and Maurice M. Lavamaki, Lomita, both of Calif., assignors to Wilorco, Inc., Long Beach, Calif.

Filed Apr. 9, 1973, Ser. No. 349,201
Int. Cl. G05f 1/20
U.S. Cl. 323—43.5 S **20 Claims**



AC and DC voltage regulators are disclosed in which in each, the output voltage V_{out} is related to $V_{in} \times T_s/T_p$, wherein V_{in} is the unregulated input voltage and T_s and T_p are the number of turns of windings of an isolation transformer or the number of turns of different portions of the winding of an autotransformer. Either T_s or T_p is varied in discrete steps in order to control the product of V_{in} and T_s/T_p to be within a preselected range. The output voltage V_{out} in the DC voltage regulator is compared with fixed reference voltages, which define the desired regulation range of the output voltage, to provide a 2-bit code, used to control the incrementing or decrementing of an up-down counter. T_s or T_p is controlled, based on the count in the counter. In an AC regulator, the AC output voltage is converted into a related DC control voltage which is compared with the reference voltages.

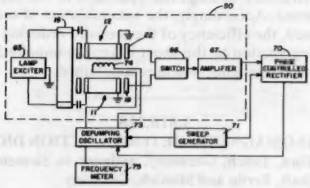
3,818,322
AIRBORN MAGNETIC SURVEY SYSTEM USING TWO OPTICAL MAGNETOMETERS ALTERNATELY SWITCHED TO ALIGN WITH THE FIELD DURING THE SURVEY

Daniel P. Hearn, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed May 3, 1973, Ser. No. 356,850
Int. Cl. G01v 3/08
U.S. Cl. 324—0.5 R **9 Claims**

Apparatus for conducting airborne magnetic surveys along parallel paths in alternating opposite directions includes first and second magnetometer cells each containing an optically pumpable gas. The first and second cells are oriented at equal

opposite angles from vertical, whereby one or the other of the cells is in alignment with the magnetic field to be measured in either opposite directions. A switch is provided to select one or the other of the cells, whichever is in alignment with the magnetic field to be measured, as the survey is conducted.



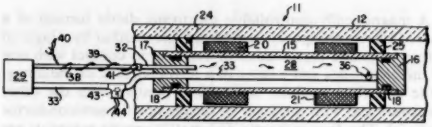
The method for conducting airborne surveys utilizing this apparatus includes aligning the first cell with the direction of the magnetic field intensity and aligning the other magnetometer cell in an opposite angle from vertical. As the direction of measurement is reversed, the cells are switched, one for the other.

3,818,323

TEMPERATURE-STABILIZED LOGGING SONDE

Donald J. Dowling; John F. Boyd, and James A. Fuchs, all of Houston, Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,145
Int. Cl. G01v *3/10, 3/18*
U.S. Cl. 324—6 **5 Claims**



A logging sonde for deep-well measurement. It is for determining electromagnetic properties of formations adjacent to the walls of the borehole. Such properties include magnetic susceptibility and/or resistivity as determined by electromagnetic induction. The sonde structure has a hollow core with transmitter and receiver coils wound thereon. The core contains a circulating fluid, and there is means for establishing and maintaining a constant temperature in order to stabilize the electrical properties of the sonde.

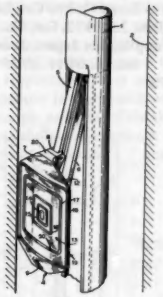
3,818,324

WELL LOGGING PAD HAVING A FLEXIBLE ELECTRODE STRUCTURE

Roger Espinasse, Essone, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 134,939, April 19, 1971, abandoned. This application Dec. 15, 1972, Ser. No. 315,383
Int. Cl. G01v *3/18*
U.S. Cl. 324—10 **7 Claims**

In accordance with an illustrative embodiment of the present invention, an improved electrode carrying pad member suitable for engaging the wall of a borehole to investigate the adjacent formations is disclosed. The electrodes carried by the pad member include a plurality of linear, strip-like concentrically arranged and rectangular shaped electrodes. To enable the pad to bend to conform to the curvature of the borehole wall while maintaining good mechanical and electrical characteristics, portions of the electrode segments



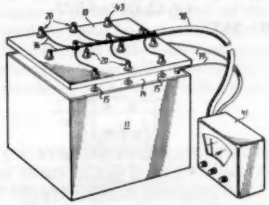
that are transverse to the longitudinal axis of the borehole are made of flexible spring blades with rigid metal segments attached thereto.

3,818,325

BATTERY TESTING DEVICE

William A. Boshers, Madison, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,327
Int. Cl. G01n *27/42*
U.S. Cl. 324—29.5 **3 Claims**

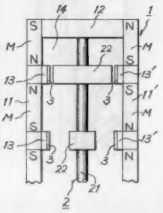


A battery testing device for testing the cells of a multiple-cell battery, the battery having a cover plate with access holes to provide access to the connecting straps between cells. A panel defines a plurality of probe assembly receiving holes located to correspond to the location of the access holes when the panel is positioned on top of the battery. A probe assembly is positioned within each probe assembly receiving hole, having a spring biased electrically conductive plunger operative to make electrical contact with the connecting strap through the corresponding access hole when the panel is pushed towards the top of the battery. There is a certain play between the probe assembly receiving hole and the probe assembly to permit lateral adjustment of the latter within the probe assembly receiving hole to enable the probe assemblies to be slightly adjusted in position to properly align with their corresponding access holes.

3,818,326
ROTARY SENSOR USING MAGNETS RESISTANCE DEVICES FOR DETECTING THE ROTATION OF A MECHANICAL SYSTEM

Noboru Masuda, Kawaguchi, and Yu Nishino, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed June 22, 1972, Ser. No. 265,255
Claims priority, application Japan, June 23, 1971, 46-45430
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 PS **9 Claims**

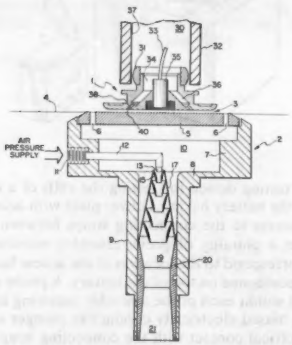


A rotary sensor comprised of a frame member having at least two bar yokes which are magnetically connected by a connecting yoke, and a shaft member which is rotated in a space formed between said bar yokes, wherein said shaft member is provided with at least two segment yokes fixed in sequence in the lengthwise direction of the shaft. Said segment yokes are arranged so that their rotating ends are deviated from each other and the bar yokes are provided with the galvano-magneto effect devices so that the devices approach the rotating ends of the segment yokes when the segment yokes are rotated.

3,818,327
MEASURING GAUGE WITH SUPPORT FOR HOLDING MEASURED SHEET AND DISCHARGING FOREIGN MATTER

Allen Dean Alexander, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Sept. 5, 1972, Ser. No. 286,075
Int. Cl. G01v *33/12*
U.S. Cl. 324—34 TK **15 Claims**

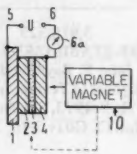


A gauge is provided for measuring a particular property of a moving sheet or web of material. In a preferred embodiment, an air caliper gauge for measuring the thickness of sheet material comprises a sensing element floating on an air film at a constant distance above the sheet and a sheet support below and in contact with the sheet. The sensing element and the sheet support form part of a transducer circuit providing an indication of the sheet thickness. Suction, which is applied to the sheet through apertures in a surface of the sheet support to maintain the sheet in a stable condition while it is measured, is produced by pressure-reducing structure within the sheet support responsive to a source of compressed air and functioning as a Venturi system. Foreign matter entering the pressure-reducing structure through the apertures in the support surface is ejected. Accordingly, the accumulation of such matter is suppressed, the efficiency of the pressure-reducing structure in providing suction to the sheet is kept unimpaired, and the accuracy of the gauging system is maintained.

3,818,328
FERROMAGNETIC HETEROJUNCTION DIODE

Werner Zinn, Julich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 76,021, Sept. 28, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,158
Claims priority, application Germany, Sept. 30, 1969, 1949359
Int. Cl. H01l *3/16, 9/10*
U.S. Cl. 324—43 R **27 Claims**



A magnetically controllable electronic diode formed of a pair of electrodes spaced apart from one another by a layer of a ferromagnetic semiconductor material in contact with one of the electrodes and a layer of a ferromagnetic or metamagnetic electrical insulator material in contact with the other electrode and with the layer of ferromagnetic semiconductor material. The ferromagnetic and metamagnetic materials are composed of transition element chalcogenides, preferably rare earth chalcogenides such as europium sulfide or selenide, binary chromium thiospinel and binary chromium halogen spinel chalcogenides of the general formula: A Cr_2 X_3 Z wherein A is selected from the group of Cu, Cd, Eu, Fe, Hg, Zn and mixtures thereof; X is selected from the group S, Se, Te and mixtures thereof; and Z is selected from the group Br, Cr, I and mixtures thereof. The impedance characteristics of the diode are readily controlled by select application of an external magnetic field controlled in its direction and amplitude so that the diode has wide utility as an electronic circuit component, such as a magnetically controllable electronic switch means, or as a detector means for the direction and strength of magnetic fields.

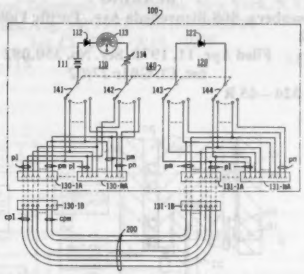
3,818,329
CABLE TESTING CIRCUIT EMPLOYING A PAIR OF DIODES TO DETECT SPECIFIC CONDUCTOR PAIR CONDITIONS

A. Lee Reaves, Jr., Clarendon Hills, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,055
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **8 Claims**

A test circuit in which the difference between the junction resistances of a pair of semiconductor diodes when forward biased and when reverse biased is employed to detect whether a conductor pair of an electrical cable is good, open, shorted, or reversed. A first and a second test bridge, one including a

first of the diodes, a potential source, and a current level indicator, the other including only the second diode, are connected across the ends, respectively, of the conductor pair under test. The functional state of the conductor pair is read from the current level indicated.



3,818,330

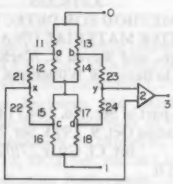
DEVICE HAVING A BRIDGE CIRCUIT FOR DETECTING FAULTS IN AN ELECTRIC NETWORK

Minoru Hiroshima, Kokubunji; Shizuhisa Watanabe, Katsuta; Takashiro Iwasaki, Kodaira; Sadao Kobayashi, Hachioji; Takahiko Tanigami, Mito, and Fumiyuki Inose, Kukubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1972, Ser. No. 281,278

Int. Cl. G01r *31/02*

U.S. Cl. 324—51 **5 Claims**



A device for detecting faults such as burning-out, earthing, short-circuiting taking place in each of a plurality of fundamental elements in an electric network in which said fundamental elements each constituting at least one kind of circuit element such as a resistor are connected in series or in parallel to each other, said device being provided with a bridge circuit connected between two equipotential points a and b, and other two equipotential points c and d in the network, and with a comparator connected between two equipotential points in the bridge circuit to thereby detect an unbalanced load produced from the bridge circuit.

3,818,331

TESTING AND MEASURING SYSTEM FOR DETERMINING THE CHARACTERISTICS OF A NETWORK OVER A VARIABLE FREQUENCY RANGE

Karl Schlosser, Planegg, Germany, assignor to Siemens AG, Berlin and Munich, Germany

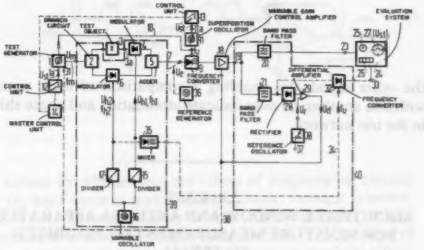
Filed Mar. 8, 1973, Ser. No. 339,080

Claims priority, application Germany, Mar. 22, 1972, 2213996

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **9 Claims**

A testing and measuring system for determining the attenuation characteristics of a network, wherein a pair of parallel paths are provided to which a variable frequency transmitter is connected and with the network or component to be tested mounted in one of the parallel branches. Modulators are mounted in each of the parallel branches so as to frequency shift the signals in the parallel branches to different frequencies, after which the parallel branches are connected together and pass through a frequency converter to provide an I. F. output at a test receiver. A variable gain control amplifier receives the output I. F. signals and a pair of band pass filters have their inputs connected to the output of the control amplifier and are tuned to respectively pass one of the side band frequencies of the modulator in the branch with the test object converted to the I. F. range, and one of the side band frequencies of the modulator in the parallel branch which did not include the test object converted to the I. F. range. A detector is



connected to the output of the band pass filter which passes the signal which does not pass through the test object and supplies an input to a differential amplifier which receives a second input from a reference oscillator and the output of the differential amplifier is connected to the variable gain control of the control amplifier. This signal may also be supplied to the transmitter oscillator to control its amplitude level. The band pass filter which passes the signal that did not pass through the test object has an output which is supplied to a modulator which receives an injection frequency and which converts its frequency to the same as that of the band pass filter which passed the signal from the test object. The output of this modulator is supplied to the evaluation system for additionally determining the phase shift characteristics of the test object or its transmission properties including phase shift.

3,818,332

TESTING SYSTEM FOR MEASURING THE CHARACTERISTICS OF A NETWORK OVER A VARIABLE FREQUENCY RANGE

Karl Schlosser, Planegg, Germany, assignor to Siemens AG, Berlin and Munich, Germany

Filed Mar. 8, 1973, Ser. No. 339,171

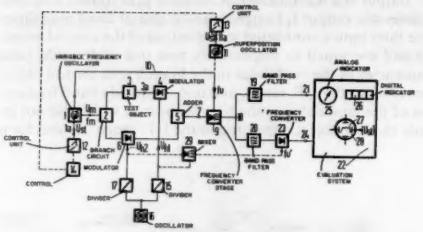
Claims priority, application Germany, Mar. 22, 1972, 2213995

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **5 Claims**

A testing system for determining the attenuation and phase shift characteristics of a network, wherein a variable frequency signal is applied to the network and simultaneously to a parallel path. The frequency of the signal passing through the test network is shifted to a first frequency range and the signal passing through the parallel network which does not contain the test network is shifted to a second frequency range; and these two signals are then combined and passed via a frequency converter stage to a pair of band pass filters, respectively tuned to pass the shifted and subsequently converted signal which has passed through the test network, and the shifted and subsequently converted signal which has passed through the

parallel network. One of the said signals is, after passing the allocated band pass filter, converted to the same frequency as



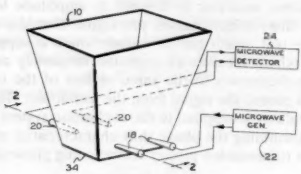
the other signal, this enabling a comparison of these signals with one another, so as to indicate attenuation and phase shifts in the test network.

3,818,333

MICROWAVE WINDOW AND ANTENNA APPARATUS FOR MOISTURE MEASUREMENT OF FLUIDIZED MATERIAL

Charles W. E. Walker, 6432 Collingwood St., Vancouver, British Columbia, Canada

Filed Aug. 9, 1972, Ser. No. 279,190
Int. Cl. G01r 27/04
U.S. Cl. 324—58.5 A **12 Claims**



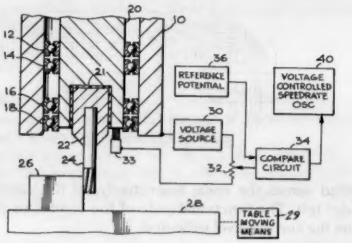
A microwave window and antenna apparatus is described for measuring the moisture content of "fluidized" material including particulate material, such as sand, or liquid material, such as oil. The container for the fluidized material is provided with a pair of microwave windows which project into the container and are in alignment with microwave transmitting and receiving antennas that cause a microwave beam to be radiated through such windows and the fluidized material and partially absorbed by the moisture therein. The microwave windows include flat inner end portions which extend parallel to each other and perpendicular to the microwave beam axis. The microwave antennas are in the form of dielectric rods and are each surrounded by a sheath of dielectric material having a dielectric constant lower than that of the antenna rod and higher than air which fills the space between such rod and the window. This prevents undesirable reflection and refraction of the microwaves and transmission of such microwaves as surface waves along the container surface. When the fluidized material is sand or other abrasive material, the microwave window is made of a hard polycrystalline ceramic, such as aluminum oxide, to reduce wear.

3,818,334

DETERMINING CUTTING TOOL FORCE BY MEASURING ELECTRICAL RESISTANCE OF A BEARING

Jack Rosenberg, 808 Bienveneda Ave., Pacific Palisades, Calif. 90272

Filed Apr. 11, 1973, Ser. No. 350,082
Int. Cl. G01r 27/02
U.S. Cl. 324—65 R **6 Claims**



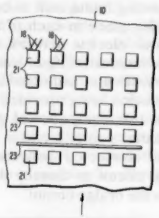
The side thrust established when a cutting tool of a machine tool is moved into engagement with a work piece may be measured by measuring the resistance change which occurs across the bearings which support the rotating spindle in which the cutting tool is held, which resistance change is caused by the application of the side thrust. This resistance change in the form of a change in voltage can be used for adaptive control of a numerically controlled machine tool.

3,818,335

SYSTEM AND METHOD FOR DETECTING AMOUNTS OF CONDUCTIVE MATERIAL ON A MOVING WEB

George E. Stungis, and Steven L. Merker, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Continuation-in-part of Ser. No. 244,714, April 17, 1972. This application Oct. 9, 1973, Ser. No. 404,585
Int. Cl. G01r 27/02
U.S. Cl. 324—65 R **13 Claims**

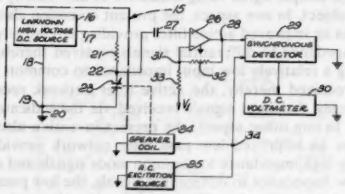


Detection of amounts of conductive material applied in patterns of discrete areas in a columnar pattern along an endless, non-conductive web is accomplished through the generation of an interrupted pulsed signal corresponding to the conductivity of the discrete areas between two points and the integration of the pulsed signals into a continuous signal which is compared to a signal of value predetermined to correspond to a desired conductivity value. A means detecting or comparing differences between the value of the generated continuous signal and the signal of predetermined value actuates an alarm or an indicating signal, thereby indicating that improper amounts of material are being applied to the web. A second indicating signal may be generated when smearing of the conductive material occurs along the length of the web.

3,818,336
HIGH VOLTAGE MEASURING APPARATUS

Neil A. Marshall, San Jose, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,160
Int. Cl. G01r 19/18, 19/26
U.S. Cl. 324—118 2 Claims

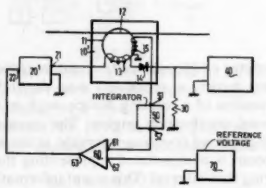


A high voltage circuit is established including a resistor and a variable capacitor adapted for connection in series with an unknown high voltage D.C. source. The capacitance of the variable capacitor is varied by a speaker excited by an A.C. source. A D.C. blocking capacitor is connected from the junction of the variable capacitor and the resistor. The A.C. voltage across the resistor or the variable capacitor is then impressed through the D.C. blocking capacitor on an A.C. voltage measuring or indicating circuit which may include a synchronous detector connected from the A.C. source, and a D.C. voltmeter connected from the synchronous detector and calibrated to read in the voltage of the D.C. source.

3,818,337
METHOD OF AND APPARATUS FOR IMPROVING THE LINEARITY OF THE CURRENT TRANSFORMATION OF A DC MEASURING TRANSDUCTOR

Maarten Groenenbroom, Escharen, and Jacques Lisser, Nijmegen, both of Netherlands, assignors to Smit Nijmegan Electrotechnische Fabrieken N.V., Nijmegan, Netherlands

Filed June 13, 1972, Ser. No. 262,199
Claims priority, application Netherlands, June 17, 1971, 7108311
Int. Cl. G01r 33/00
U.S. Cl. 324—127 12 Claims

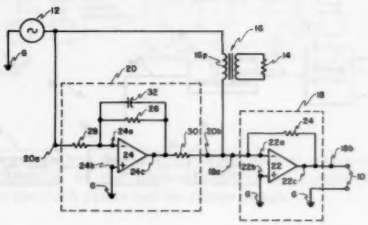


The linearity of the current transformation of a DC measuring transductor, having on a core of magnetisable material a primary winding carrying the DC to be measured and a secondary winding fed with an AC voltage, is improved by so controlling the AC voltage as to maintain the flux variation of the core at a constant value. The control is effected by means of a difference signal derived by comparison of a voltage constituting a measure of the flux variation with a constant reference voltage or by means of a signal representing the voltage loss occurring in a measuring circuit containing the secondary winding.

3,818,338
MAGNETIZING CURRENT COMPENSATING CIRCUIT

Charles W. Chambers, Jr., Amherst, and Frederick J. Kiko, Sheffield Village, both of Ohio, assignors to Lorain Products Corporation, Lorain, Ohio

Filed Sept. 21, 1972, Ser. No. 291,001
Int. Cl. G01r 1/20, 15/10
U.S. Cl. 324—127 10 Claims

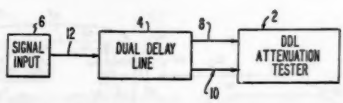


A circuit for eliminating the effect of magnetizing current flow on load current measurements made through transformers. A current indicating network provides an output voltage proportional to both the magnetizing and load components of the current through a transformer without substantially affecting the magnitude of the voltage across or current through that transformer. A compensating current generating circuit generates a current which is equal in magnitude and opposite in phase to the magnetizing current flow through the transformer over a wide band of frequencies. This compensating current is applied to the current indicating network in cancelling relationship to the magnetizing current component of the current through the transformer to render the output voltage indication independent of magnetizing current flow so that the load current component can be accurately measured.

3,818,339
AMPLITUDE COMPARISON CIRCUIT

Dewie E. Black, Dearborn Heights, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 280,267, Aug. 14, 1972, Pat. No. 3,769,580. This application June 7, 1973, Ser. No. 368,068
Int. Cl. G01n 7/00
U.S. Cl. 324—140 R 6 Claims

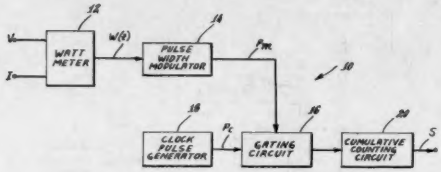


An electronic circuit for measuring and comparing the amplitude of a plurality of out of phase signals. The amplitude measurements are accomplished by converting the signals to direct current voltages which equal the peak-to-peak amplitude of the signals. These direct current voltages are then compared electronically to a precision reference voltage which equals the peak-to-peak amplitude of a referenced signal. Direct measurements are then taken of the attenuation of the tested signals by reading the direct current voltages. Additional circuitry is provided to make a pass-fail decision automatically where certain limits have been established for the attenuation of the signals to be tested.

3,818,340
ELECTRONIC WATT-HOUR METER WITH DIGITAL OUTPUT REPRESENTING TIME-INTEGRATED INPUT

Keiki Yamaguchi, Mushashino, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed Mar. 22, 1972, Ser. No. 237,067
Claims priority, application Japan, Mar. 26, 1971, 46-18283
Int. Cl. G01n 21/00
U.S. Cl. 324—142 12 Claims

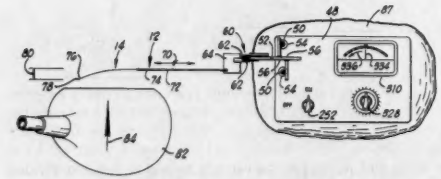


An electronic meter, such as a watt-hour meter, arranged to process an input signal which has an amplitude varying instantaneously with time, such as a wattage signal, and to provide a digital output signal representing the time-integrated value of the input signal, for example, a digital output representing accumulated watt-hours of electrical power. The meter applies the time-varying input signal to a pulse width modulating means to convert the input signal into a pulse signal in which the pulse width varies in correspondence to the amplitude of the input signal. The modulated pulse signal drives a gating circuit which controls the application of a steady clock pulse signal from a generator to a pulse counting means providing a digital signal output representing the cumulative total of clock pulses applied thereto through the gating circuit. The gating circuit, in response to the modulated pulse signal, applies a proportion of the total clock pulses which corresponds in number to the time-integrated value of the input signal, thereby providing the desired digital watt-hour output.

3,818,341
APPARATUS FOR PROVIDING OUTPUT INDICATIONS RESPONSIVE TO THE MOVEMENT OF A MOVING BODY

Neal M. Burdick, 1442 N. W. 45th St., Oklahoma City, Okla. 73118

Filed Oct. 2, 1972, Ser. No. 294,380
Int. Cl. G01p 3/46
U.S. Cl. 324—163 28 Claims

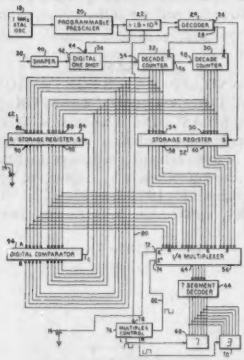


The present invention contemplates an improved indicator apparatus receiving an input signal from a transducer generated via the movement of a portion of the transducer within a magnetic field, sensing the movement of the portion of the transducer a predetermined distance and developing a sample signal in response thereto, and holding and displaying the developed sample signal, the indicator apparatus integrating the received, input signal and developing the sample signal in response to a sensed, integrated input signal of a predetermined minimum value. The indicator apparatus also generates a trigger signal indicating the development of the sample signal and a control preventing the development of subsequent sample signals until the indicator apparatus is reset. In one form, the indicator apparatus is particularly useful for indicating the velocity of a moving object such as a golf club head or the like, the moving object striking and moving the portion of the transducer to develop the input signal and the developed sample signal being indicative of the velocity of the moving object. In one aspect, the present invention also contemplates an improved active filter providing a relatively high input impedance to differential signals received thereby and providing a relatively low input impedance to common mode signals received thereby, the active filter network receiving and filtering the input signals received via the indicator apparatus. In one other aspect, the present invention also contemplates an improved low pass filter network providing a relatively high impedance to common mode signals and a relatively low impedance to differential signals, the low pass filter network being utilized to filter the input signals received via the indicator apparatus.

3,818,342
PULSE OPERATED TACHOMETER WITH HIGHEST SPEED MEMORY

Harry S. Stevens, Kansas City, Mo., assignor to Harmon Industries, Inc., Grain Valley, Mo.

Filed Nov. 13, 1972, Ser. No. 305,798
Int. Cl. G01p 3/48
U.S. Cl. 324—169 12 Claims

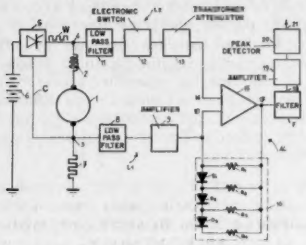


A tachometer employs decade counters responsive to electrical pulses having a repetition rate dependent upon the speed of rotation of a rotating device, such as the crankshaft of an internal combustion engine. The counters are operational during spaced counting intervals; at the end of each interval, a count is accumulated representing the speed of the device during that interval. This count information is stored in a register until the next succeeding count has been derived. An independent memory is also responsive to the count information and remembers the highest count derived by the counters during any previous counting interval. Normally, digital indicators display the speed of the device as continuously updated by the counters, but a manual selector switch is provided which, when actuated, causes the indicators to display the highest speed previously attained stored in the independent memory. A pulse shaping circuit is provided which adapts the tachometer for use with various types of ignition systems, including the Kettering ignition that employs breaker points from which input impulses are obtained for the tachometer logic.

3,818,343
ELECTRONIC DEVICE FOR SPEED SIGNALLING IN A D.C. MOTOR

Guido Galli, Bastiglia, and Vito Tateo, Milan, both of Italy, assignors to Fabbrica Italiana Magneti Marelli, S.p.A., Milan, Italy

Filed Apr. 24, 1972, Ser. No. 246,840
Claims priority, application Italy, July 31, 1971, 26996/71
Int. Cl. G01p 3/46
U.S. Cl. 324—177 10 Claims



Apparatus for developing an alternating signal whose amplitude is proportional to motor speed for monitoring motors and the like, said apparatus comprising means for converting a signal from the motor supply proportional to the supply voltage to a continuous signal; second means for converting a signal from the motor proportional to the current drawn by the motor to an alternating signal; applying the aforesaid signals to respective input terminals of a logarithmic amplifier for developing a composite signal having a constant component and an alternating component; and filtering said composite signal to pass only said alternating signal whose amplitude is proportional to motor r.p.m.

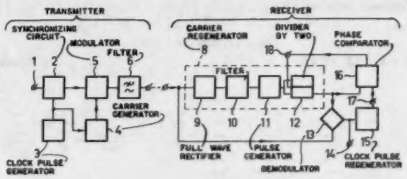
The resultant alternating signal may be converted to a d.c. or continuous signal by detector means for an output whose amplitude is proportional to motor r.p.m.

3,818,344
SYSTEM FOR TRANSMITTING INFORMATION PULSES

Dirk Muilwijk, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 15, 1972, Ser. No. 234,916
Claims priority, application Netherlands, Mar. 25, 1971, 7104072
Int. Cl. H04l 27/10
U.S. Cl. 325—30 4 Claims

A system for transmitting information pulses comprising a transmitter and a reciver. The transmitter comprising a carrier generator, a modular which is coupled thereto and a clock pulse generator. The information pulses are synchronized with the clock pulses, which also determine a fixed phase relationship between the carrier signal and the clock pulses. The carrier signal is phase-shifted modulated by the information signal. The receiver comprises a carrier regenerator and a demodulator which is connected thereto and which receives the phase-shift modulated carrier signal. The output of the demodulator is connected to a clock pulse generator for deriving ambiguous clock pulses synchronized with the clock pulses of the transmitter by detecting zero passages of the demodulated signal. The output of the clock pulse generator is connected to

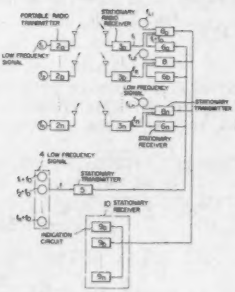


a phase comparison device which is feedback to compensate for differences in the predetermined phase relationship between the clock pulses and the carrier signals.

3,818,345
LOW FREQUENCY SIGNAL TRANSMISSION AND INDICATING SYSTEM

Masami Miya, Tokyo; Hidetoshi Yarita, Kawasaki, and Hirotaka Atsuzaka, Omiya, all of Japan, assignors to Nepon Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 29, 1972, Ser. No. 319,827
Int. Cl. H04b 1/00, 7/00
U.S. Cl. 325—53 5 Claims

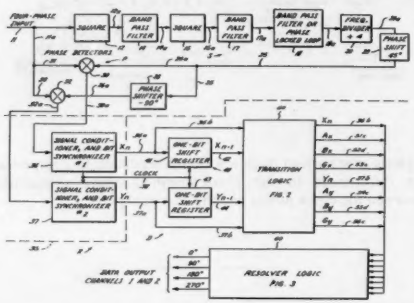


Low frequency signals f_1 through f_n are respectively assigned to respective portable radio transmitters and each transmitter transmits a wave modulated by this assigned low frequency signal. On the other hand, a set of a radio receiver, local receiver and a local transmitter is provided in each divided area to which one of low frequency signals fL_1 through fL_n is assigned. A center transmitter selects a signal designating a portable radio transmitter to be detected and transmits this signal to the local receivers in these divided areas. When the object radio transmitter exists in one of these areas, the local transmitter in this area transmits the low frequency signal assigned to this area to a center receiver. The center receiver operates indication means corresponding to the signal from the local transmitter, i.e., the signal corresponding to the area, thereby detecting the area in which the object radio transmitter designated by the center transmitter is located.

3,818,346
DIFFERENTIAL PHASE-SHIFT-KEYED SIGNAL RESOLVER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Phillip M. Hopkins, Houston, and Wally M. Wallingford, Kemah, both of Tex.

Filed Oct. 12, 1972, Ser. No. 297,127
Int. Cl. H04b 1/16
U.S. Cl. 325—320 7 Claims

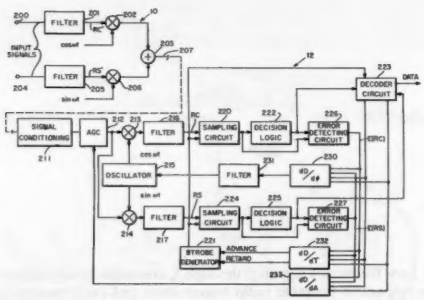


A differential phase shift keyed (DPSK) signal resolver resolves the differential phase shift in the incoming signal to determine the data content thereof overcoming phase uncertainty without requiring a transmitted reference signal.

3,818,347
RECEIVER FOR AMPLITUDE MODULATED QUADRATURE CARRIER SIGNALS

Jerry L. Holsinger, Burlington, Mass., assignor to Intertel, Inc., Burlington, Mass.

Filed Oct. 10, 1972, Ser. No. 296,025
Int. Cl. H04l 27/06
U.S. Cl. 325—321 18 Claims

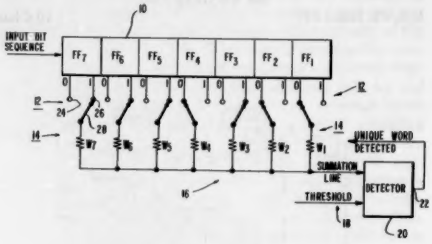


A receiver for amplitude-modulated quadrature carrier signals which contain data. Balanced demodulators recover demodulated data signals which are decoded to regenerate the data. Various control circuits monitor the demodulated data signals and based upon the data these signals represent, generate an error signal which indicates the quality of the recovered demodulated data signals. The control circuits control the operation of a local oscillator, which connects to the demodulators, or decoder which retains the data, to improve the quality as necessary by adjusting oscillator phase or decoder timing. In one embodiment, incoming carrier gain is also controlled.

3,818,348
UNIQUE WORD DETECTION IN DIGITAL BURST COMMUNICATION SYSTEMS

John G. Puente, Rockville, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed May 17, 1971, Ser. No. 144,173
Int. Cl. H04b 1/10
U.S. Cl. 325—324 4 Claims

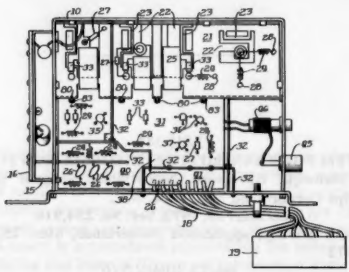


A correlator for detecting unique words in satellite communications systems operating in a burst communications mode variably weights the bits in the unique word inversely to the probability of bit error in the received unique word. The probability of bit error is greater for bits at the front end of the unique word because they may occur before the receiver circuits lock onto the received burst. Consequently, according to the weighting scheme the bits at the front end of the unique word are assigned weighting functions which are less than those assigned to the bits at the rear end of the unique word.

3,818,349
THICK FILM VHF TUNER WHEREIN UHF SUBCHASSIS IS USED AS EXTERNAL GROUND ELEMENT FOR VHF TUNER

John Ma, Glenview, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 1, 1973, Ser. No. 402,512
Int. Cl. H04b 1/08
U.S. Cl. 325—352 10 Claims



A television tuner has a UHF section comprising a stamped metal subchassis forming a plurality of resonant circuit elements whose electrical characteristics are adjustable by deforming portions thereof and a thick film integrated circuit VHF section comprising a nonconductive substrate upon which a plurality of resistive, conductive and capacitive circuit elements are formed by resistive, conductive and dielectric materials deposited in predetermined patterns. A number of discrete components are directly connected to both the UHF and VHF sections. A shielded metal housing supports the stamped metal subchassis and thick film integrated circuit. A

plurality of mounting fingers comprising extensions of the stamped subchassis form electrical and mechanical connections to the thick film integrated circuit resiliently supporting it and permitting the subchassis to function as an external ground element therefor.

3,818,350

TUNING ARRANGEMENT

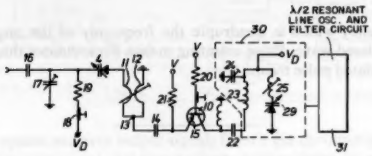
Gerhard Lobenhofer, deceased, late of Amberg, Germany; by Anna Lobenhofer; by Annemarie Mauracher, both of Amberg, Germany (heiresses), and Dieter Beifuss, Nuremberg, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 11, 1970, Ser. No. 123,162

Claims priority, application Germany, Mar. 13, 1970, 2011893

Int. Cl. H04b 1/26

U.S. Cl. 325—445 **4 Claims**



A tuning device comprising a band-pass filter, oscillator circuits in the form of λ/2 resonant-line circuits, particularly in the form of a printed circuit applied to a metal-clad board of insulating material, and a tunable input circuit in the form of a λ/4 resonant-line circuit.

3,818,351

CHANNEL NUMBER DISPLAY DEVICE

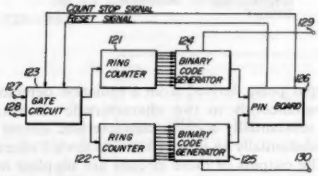
Yasuaki Terui, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 18, 1972, Ser. No. 272,950

Claims priority, application Japan, July 20, 1971, 46-54491

Int. Cl. H04b 1/26

U.S. Cl. 325—455 **3 Claims**



In a channel number display device used with an automatic channel selecting system there is provided a means which generates signals representative of a plurality of predetermined channels each time a control signal is applied thereto, the control signal being generated by a means for automatically selecting channel from among the predetermined channels by sequentially scanning the channels in the order of the number of the channels.

3,818,352

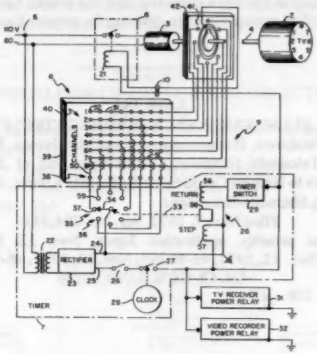
AUTOMATIC TELEVISION PROGRAMMER

Robert L. Moran, 4 Mackintosh St., Franklin, Mass. 02038

Filed May 1, 1972, Ser. No. 249,360

Int. Cl. H04b 1/16

U.S. Cl. 325—396 **5 Claims**



TV channel program comparing on a TV set is automatically performed according to a stored program by a motor which drives the channel selection mechanism, as dictated by the stored schedule of channels versus time. A timer steps through the programparing the scheduled channel with the position of the TV channel selection mechanism, producing a signal which initiates energization of the motor and so provides a null seeking position feedback type of control for carrying out the program. The apparatus has use to select television programs for display or for recording over substantial periods when the television receiver is not attended.

3,818,353

AUTOMATIC TUNING APPARATUS HAVING DUAL FREQUENCY SWEEP

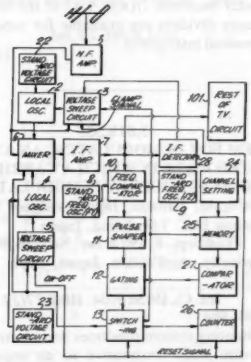
Yoichi Sakamoto, Yoyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma City, Osaka Prefecture, Japan

Filed May 8, 1972, Ser. No. 251,269

Claims priority, application Japan, May 8, 1971, 46-30636; May 8, 1971, 46-30637; May 8, 1971, 46-30638; May 8, 1971, 46-30639; May 8, 1971, 46-30640

Int. Cl. H04b 1/32

U.S. Cl. 325—470 **36 Claims**



In an automatic tuning apparatus having a local oscillator which comprise varactors (i.e., variable capacitance diodes)

as responsance capacitors, the local oscillator is capable of sweeping its frequency from a preliminary frequency over a specified sweep range exceeding the proper frequency for tuning in a broadcast signal of a channel. When a broadcast signal is present in that channel, the sweep is terminated at the proper freuqncy, so as to tune in and receive the signal; however, when no signal is present in the channel, the sweep continues until it has been detected that the sweep has traversed the specified sweeping range, passing the proper frequency.

3,818,354
PULSE FREQUENCY DIVIDING CIRCUIT

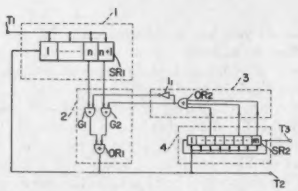
Norio Tomisawa, Hammamatsu; Yasuji Uchiyama, Hamakita, and Takatoshi Okumura, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Nov. 7, 1972, Ser. No. 304,451

Claims priority, application Japan, Nov. 12, 1971, 46-90364; Nov. 12, 1971, 46-90365; Nov. 12, 1971, 46-90366

Int. Cl. H03k *21/00, 21/36*

U.S. Cl. 328—41 **4 Claims**



The n-th and the $(n+1)$th stages of a shift register are connected back to its first stage respectively via gates among with either one is conductive at a time, thereby constituting a ring counter of a scale of n at one time and that of a scale of $n+1$ at another. A second counter of a scale of m counts the cycling number of the ring counter and determines which of the gates is to be conductive for every ring counting cycle. If the ring counter is set x times per m cycles at a scale of $n+1$ and the rest of time at a scale of n, the output frequency from the ring counter becomes $1/[n + x/m)]$ of an input pulse frequency on an average, while the output frequency from the second counter becomes $1/(n \cdot m + x)$ of the input frequency. Such frequency dividers are available for tone generators of electronic musical instrument.

3,818,355
SYSTEM FOR DEMODULATING AN ANGULAR MODULATED WAVE IN WHICH A CARRIER WAVE OF LOW FREQUENCY IS MODULATED

Yukinobu Ishigaki, Yamato, Japan, assignor to Victor Company of Japan Ltd., Yokohama, Japan

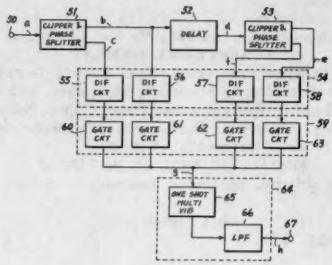
Filed Sept. 6, 1972, Ser. No. 286,808

Claims priority, application Japan, Sept. 18, 1971, 46-72633

Int. Cl. H03d *3/04;* **H04l** *27/22*

U.S. Cl. 329—104 **8 Claims**

A demodulating system produces two square waves of mutually opposite phase responsive to an angular modulated wave in which a carrier wave of low frequency is modulated. The phase of one square wave is delayed by 90°, thereby to produce two square waves of mutually opposite phase. The four square waves of phases respectively differing by 90° are differentiated for producing a differentiated pulse train of a



frequency which is quadruple the frequency of the angular modulated wave. Pulse counting means demodulates this differentiated pulse train.

3,818,356
PULSE-SHAPE DISCRIMINATING CIRCUIT, FOR DISCRIMINATING BETWEEN PULSES OF DIFFERING AMPLITUDE AND TIME DURATION

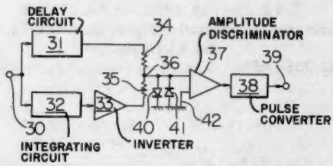
Setsuro Kinbara, Ibaragi, Japan, assignor to Japan Atomic Energy Research Institute, Minato-ku, Tokyo, Japan

Continuation of Ser. No. 810,222, March 25, 1969, abandoned. This application Mar. 23, 1972, Ser. No. 237,584

Claims priority, application Japan, May 10, 1968, 43-30843

Int. Cl. H03k *5/20*

U.S. Cl. 328—112 **3 Claims**



An output pulse derived from a radiation detector is supplied simultaneously to two characteristic circuits, one of which is substantially a delay characteristic circuit and the other is substantially an integration or a stretch characteristic circuit. The outputs of these circuits are supplied to an amplitude discriminator in which the width of the output pulse is determined by detecting two intersecting phases of the output waveform of the delay characteristic circuit with the output waveform of the expansion circuit. Further, if either of the outputs of these circuits is inverted in polarity by a polarity inverter and the inverted output and the other output are added in a suitable means connected between the output terminals of the other circuit and the inverter, an improved pulse-shape discrimination can be performed by the discriminator by amplitude-discriminating said added output with a reference voltage which is selected as equal to a D.C. output voltage of said means at the normal state thereof.

3,818,357

INTEGRATOR PROVIDING AUTOMATIC TANGENTIAL BASE-LINE CORRECTION

Ivan L. Crockett, Cochranville, Pa., and Ian H. Davidson, London, England, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 185,999, Oct. 4, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 299,548

Int. Cl. H03k 17/00

U.S. Cl. 328—127 11 Claims

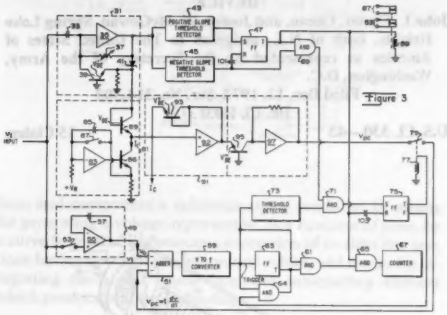


Figure 3

A system receives output signals from a gas chromatograph and integrates on a real time basis the area under peak curves superimposed on an exponentially decreasing solvent tail. Integration of a peak curve is performed in two parts. First, a constant level baseline correction signal is established at the starting point of the peak, the the curve is integrated with respect to the baseline correction signal during the time interval between the starting point and the crossover point of the peak curve and the baseline correction signal. Secondly, the peak curve is integrated with respect to both the baseline correction signal and a derived peak correction signal during the time interval between the crossover point and an end point of the curve. The sum of the two integrals indicates the area between the peak curve and a sloping baseline which extends from the starting point of the peak curve and is tangent to the exponentially decreasing solvent tail at an end point of the peak curve.

3,818,358

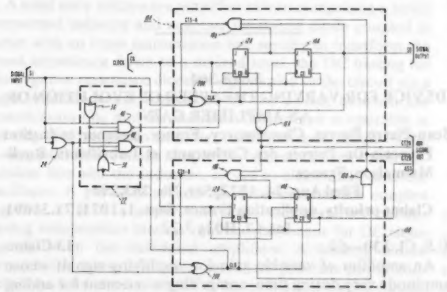
NOISE REJECTION CIRCUIT FOR DIGITAL SYSTEMS

Stanley L. Russell, West Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,837

Int. Cl. H03b 1/04; H04b 15/00

U.S. Cl. 328—163 12 Claims



A noise rejection circuit including a pair of lockup counters, wherein separate counters are enabled by different states of digital signals applied thereto to count clock pulses during the presence of the signals and in response to counting a preset number of clock pulses to reach a lockup condition. A reset circuit is provided between the lockup counters so that in response to the change in the state of digital signals for a duration covering a preset number of clock pulses one lockup counter resets the other and vice versa. An output circle is included in at least one lockup counter that provides output signals corresponding to the input signals less noise pulses.

3,818,359

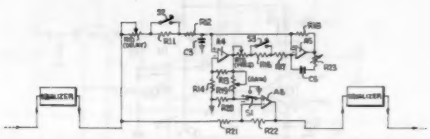
LINE EQUALIZER CIRCUIT EMPLOYING ACTIVE GYRATOR

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed Nov. 29, 1972, Ser. No. 310,566

Int. Cl. H03b 3/04; H04b 1/12

U.S. Cl. 328—167 9 Claims



A line equalizer employs an operational amplifier having an inverting input terminal to which the input signal is resistively coupled and a non-inverting input signal to which the input signal is coupled via a bandpass filter. The filter includes an active gyrator circuit to simulate an inductance and is easily tuned to obtain the desired center frequency. Gain and delay adjustment is achieved simply and quickly by means of respective variable resistors.

ERRATUM

For Class 329—104 see:
Patent No. 3,818,355

3,818,360

REGENERATIVE REPEATER OUTPUT STAGE FOR BIPOLAR CODED MESSAGE SIGNALS

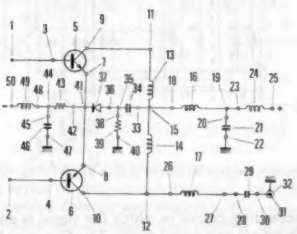
Patrick E. Boutmy; Gilbert J. Le Fort, both of Lannion, and Daniel J. M. Betoule, Perros-Guirec, all of France, assignors to Societe Anonyme De Telecommunications, Paris, France

Filed Mar. 12, 1973, Ser. No. 340,380

Claims priority, application France, June 23, 1972, 72.22779

Int. Cl. H03f 3/26

U.S. Cl. 330—15 3 Claims



An output stage for a bipolar coded signal amplifier, having two pairs of input terminals receiving signals of the same polarity, and one pair of output terminals delivering bipolar

signals. It comprises two transistors of the same type of conductivity, combined with a four-port directional coupler, thanks to the use of a suitably connected semiconductor diode, the average d.c. supply current of the circuit is lower than that of the known systems. A variant of embodiment includes a third transistor.

3,818,361

VOLTAGE-POWER BOOSTER FOR AN OPERATIONAL AMPLIFIER

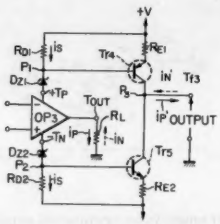
Tsunemi Gonda, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 12, 1972, Ser. No. 314,358

Claims priority, application Japan, Dec. 20, 1971, 46-102592

Int. Cl. H03f 3/68

U.S. Cl. 330—22 **5 Claims**



A voltage-power booster for an operational amplifier employs positive and negative voltage amplifier circuits connected to the positive and negative voltage supply terminals of the operational amplifier to produce output voltages for positive and negative signals which exceed the rated output voltage of the operational amplifier.

3,818,362

NOISE REDUCTION CIRCUIT

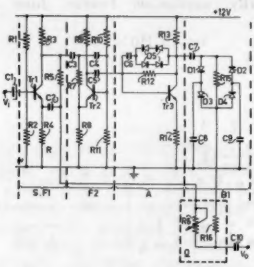
Robert Nestor Joseph van Sluys, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,264

Claims priority, application Netherlands, May 4, 1971, 7106040

Int. Cl. H03f 3/68

U.S. Cl. 330—30 R **8 Claims**



Noise reduction circuit in which the signal is applied to an adding circuit via two signal paths. The first signal path comprises a high-pass filter and an automatic gain control which is designed so that signals having an amplitude exceeding a given threshold value are strongly attenuated. The second signal path includes an all-pass filter. The gain and the phase shift in each signal path are such that corresponding signals cancel one another at the inputs of the addition circuit. The all-pass filter and the high-pass filter are selected to have transfer characteristics such that the overall transfer function has a maximum-flatness characteristic in the pass band.

3,818,363

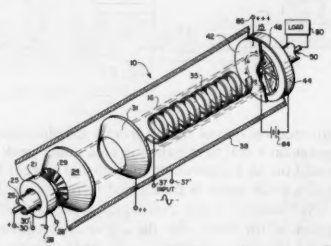
ELECTRON BEAM SEMICONDUCTOR AMPLIFIER DEVICE

John L. Carter, Ocean, and Joseph W. McGowan, Spring Lake Heights, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 12, 1972, Ser. No. 314,303

Int. Cl. H03f 3/58

U.S. Cl. 330—43 **15 Claims**



An electron beam semiconductor amplifier tube having at least one array of parallelly connected, back-biased semiconductor diodes having an impedance low compared with that of the amplifier load and disposed along a wave energy transmission means at a region thereof of impedance substantially equal to that of each of the diodes. Each diode is bombarded by a hollow, current-modulated electron beam directed along the axis of the diode array and the beam electrons penetrate into the depletion region of the diode which is adjacent the bombarded surface. The interaction of the beam with each of the semiconductor target diodes produces an amplified current in a load circuit common to said diodes which is a function of the electron beam current. Wave energy generated by the current induced in each of the diodes by the impinging electron beam propagates along the transmission means to the load. The impedance of the transmission means is varied progressively as the load is approached, so that the low impedance diodes are matched to the load.

3,818,364

DEVICE FOR VARYING THE SPEED OF EVOLUTION OF AN AMPLIFIER GAIN

Jean-Pierre Barret, Chambourcy, France, assignor to Institut Francais Du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Aug. 24, 1972, Ser. No. 283,293

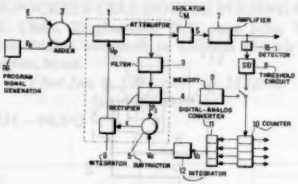
Claims priority, application France, Sept. 1, 1971, 71.31691

Int. Cl. H02g 3/22

U.S. Cl. 330—52 **13 Claims**

An amplifier of variable gain for amplifying signals whose amplitude vary during time, comprising an element for adding these signals to a program-signal, the amplitude of which is independent from the amplitude variations of said signals, means for attenuating the signal resulting from said addition of

signals, with an attenuation factor depending on a control voltage, and means for generating said control voltage comprising means for isolating from the signal produced by said attenuating means the component thereof which corresponds to the program-signal, a substracting element for substracting



from said component a reference signal produced by means for generating a voltage represented, as a function of time, by a curve formed of a continuous succession of straight line sections having slopes of predetermined values, and means for integrating the signal issued from the substracting element which produce said control voltage.

3,818,365

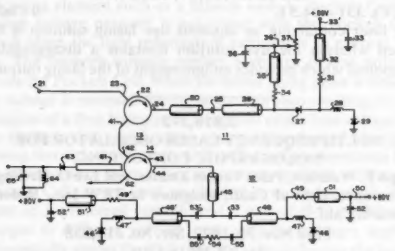
MICROWAVE AMPLIFIER CIRCUIT UTILIZING NEGATIVE RESISTANCE DIODE

Delon C. Hanson, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 23, 1971, Ser. No. 173,766

Int. Cl. H03f 3/60

U.S. Cl. 330—53 **3 Claims**



A solid state microwave amplifier circuit comprising a series connected inductor and negative resistance diode coupled in series with an input transmission line serving to transform the input impedance down to a desired level, the DC biasing for the negative resistance diode being coupled to the circuit via a high impedance line connected to the circuit between the transmission line and the inductor. The circuit is operable in the negative resistance amplifier mode or the oscillator mode. A varactor diode, when coupled in series between the transmission line and the inductor, serves to electrically tune the oscillator. A plurality of said amplifier circuits are coupled together to form a power combiner, said amplifier circuits having independent biasing circuits with means for DC isolation between the individual amplifiers. A loading circuit between the power combiner amplifiers prevents power cancellation. A microwave amplifier operating as a locked oscillator serves as one stage of a microwave amplifier package and power combiner including a plurality of microwave amplifiers operating as locked oscillators serves as a second stage of the package.

3,818,366

POWER SUPPLY SYSTEM

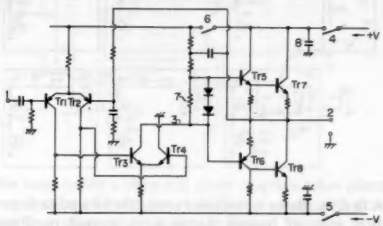
Ichiro Arimura, Kyoto; Hiroshi Goto; Hiroshi Matsushima, both of Osaka, and Yoshikazu Nakao, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 77,591, Oct. 2, 1970, abandoned. This application July 14, 1972, Ser. No. 272,033

Claims priority, application Japan, Oct. 7, 1969, 44-80461; Oct. 14, 1969, 44-82455; Oct. 14, 1969, 44-82456; Oct. 20, 1969, 44-84349; Oct. 20, 1969, 44-84350; Jan. 24, 1970, 45-6418; June 29, 1970, 45-65609

Int. Cl. H04f 21/00

U.S. Cl. 330—207 P **10 Claims**



A power supply system for an amplifier which is driven by two power supply means of opposite polarity and whose output swings substantially about zero potential level.

The power supply system is provided with means for cutting off the active power supply means earlier than the passive power supply means in the event of the application of an excessively large input or overcurrent to the amplifier, thereby preventing any damage to the amplifier, power supply means and load.

3,818,367

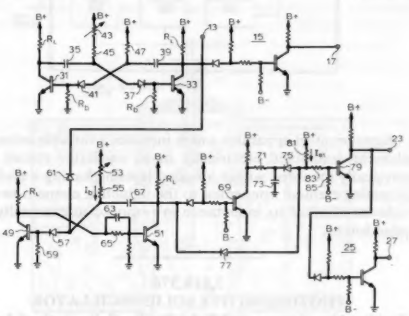
ADJUSTABLE SLOW AND DELAYED PULSE OSCILLATOR

Gerald A. Christenson, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 29, 1973, Ser. No. 375,253

Int. Cl. H03k 1/12

U.S. Cl. 331—45 **7 Claims**

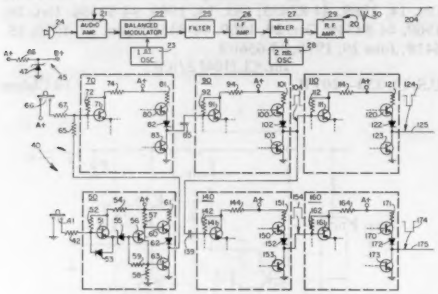


Apparatus for generating a first series of output pulses and a corresponding series of delayed output pulses, each delayed pulse being adjustably delayed with respect to the corresponding first output pulse by a selectable time interval. In a specific embodiment of the invention, the apparatus comprises an astable oscillator for generating the first output pulses, a monostable oscillator for generating adjustably delayed pulses responsive to the corresponding first pulses, and pulse shortening means for processing the adjustably delayed pulse to provide delayed output pulses of reduced pulse width.

3,818,368
PLURAL OSCILLATOR SYSTEM FOR GENERATING SIMULTANEOUS PAIRS OF SEQUENTIAL TONES

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr. 68850

Division of Ser. No. 165,475, July 26, 1971, Pat. No. 3,771,060. This application Feb. 28, 1973, Ser. No. 336,779
Int. Cl. H03b 3/00
U.S. Cl. 331—48 3 Claims

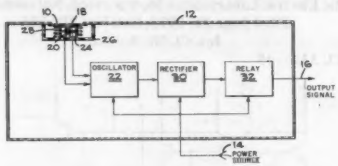


A first oscillator is rendered operative by a pulse to produce a first tone of limited duration. A second oscillator has frequency determining elements which are sequentially coupled in circuit by a sequence of pulses applied to the second oscillator, to produce a sequence of second tones in time coincidence with the first tone.

3,818,369
VARIABLE INDUCTANCE SIGNAL CONTROL APPARATUS

Dale C. Brocker, 19525 Forest Ave., Castro Valley, Calif. 94546

Filed June 19, 1972, Ser. No. 264,077
Int. Cl. H03b 3/04
U.S. Cl. 331—65 3 Claims



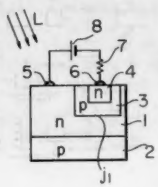
Signal control apparatus which includes a variable inductive element connected electrically in an oscillator circuit and physically mounted within a sealed housing having a resilient actuating element connected to the inductive element to provide variation of its inductance in response to externally-applied forces.

3,818,370
PHOTOSENSITIVE SOLID OSCILLATOR

Toshiro Abe, Katano, and Keizi Kakite, Suita, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 142,913, May 13, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,100
Claims priority, application Japan, May 14, 1970, 45-41418; May 15, 1970 45-41862
Int. Cl. H03b 7/06
U.S. Cl. 331—66 12 Claims

A photosensitive solid oscillator which performs its oscillation when a light irradiation is provided substantially at the side of main electrodes. The oscillator comprises a wafer consisting of a semiconductor material, a lower impurity region of reverse conduction type to that of said semiconductor wafer and formed on the lower surface of the wafer, a first upper impurity region of reverse conduction type to that of the wafer and formed on part of the upper surface of the wafer, second upper impurity region of the same conduction type as the wafer and formed on the upper surface of said first upper impurity region, first and second ohmic main electrodes provided respectively on the surface of said second upper impurity region and on the exposed surface of the wafer, and a DC voltage source applied between said two main electrodes so that said voltage is in the reverse direction with respect to the junction between said wafer and said first upper region on the wafer.



3,818,371
LASER CONTAINING AN ORGANIC DYE LASING COMPOSITION

Arthur H. Herz; William C. McGolgin; John S. Hayward, and Otis G. Peterson, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

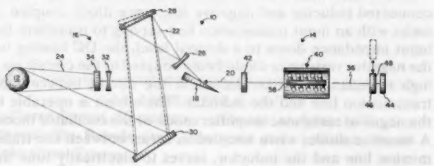
Continuation of Ser. No. 29,027, March 30, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,335
Int. Cl. H01s 3/14; C09k 1/02
U.S. Cl. 331—94.5 L 9 Claims

A laser containing an aqueous dye lasing solution is disclosed wherein the dye solution contains a disaggregating compound which provides enhancement of the lasing output.

3,818,372
MULTIFREQUENCY LASER OSCILLATOR FOR HOLOGRAPHIC CONTOURING

Ralph F. Wuerker, Palos Verdes Estates, and Lee O. Heelinger, Torrance, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Nov. 30, 1972, Ser. No. 310,858
Int. Cl. H01b 3/10
U.S. Cl. 331—94.5 M 6 Claims



A multifrequency laser oscillator which generates coherent light of two closely adjacent optical frequencies in rapid succession for recording contour holograms by the double exposure technique. The two light frequencies are selected by a pair of frequency selecting reflectors at one end of the oscillator resonator cavity. At least one of these reflectors is movable between an active position where it reflects the laser beam to

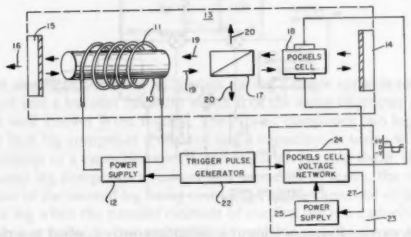
select one light frequency and an inactive position where the other reflector reflects the beam to select the other light frequency. The described laser oscillators have a ruby lasing medium and generate coherent light at the R_1 and R_2 wave lengths of the ruby resonant fluorescence.

3,818,373

SINGLE POCKELS CELL DOUBLE PULSING SCHEME

Myung K. Chun, Binghamton, N.Y., and John T. Bischoff, Blackfoot, Idaho, assignors to General Electric Company, Wilmington, Mass.

Filed Jan. 8, 1973, Ser. No. 322,008
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 Q **8 Claims**



A Q-switched laser is described which can produce multiple light output pulses during each pumping interval. Thus, two output pulses from a single laser rod may be produced with a time separation variable from less than 100 nanoseconds to several hundred microseconds. This novel Q-switched laser includes a neodymium:YAG laser rod positioned in an optical cavity along with a linear polarizer and an electro-optical light polarizing element such as a lithium niobate Pockels Cell. A biasing voltage network is associated with the Pockels Cell which alters the light polarization sufficiently to prevent lasing. The network initially applies a voltage of one polarity across the Pockels Cell. When the initial lasing pulse is desired the voltage is reversed driving it through zero resulting in the emission of a first lasing pulse. Reversal of the bias voltage on the Pockels Cell again alters the polarization of the light passing through the Pockels Cell sufficiently to terminate lasing action. At a later time, the reverse voltage across the Pockels Cell is removed producing a second output light pulse. In a preferred embodiment a pair of R-C circuits are charged to different voltage levels with the voltages applied differentially across the Cell. The R-C circuit having the larger voltage is then discharged. As a result, the bias voltage across the cell is effectively reversed driving the voltage across the Cell through zero. When the cell bias voltage goes through zero, the Q of the cavity is raised sufficiently to produce lasing and a first light output pulse. Thereafter, the second R-C circuit is discharged again driving the cell voltage through zero and generating a second light output pulse.

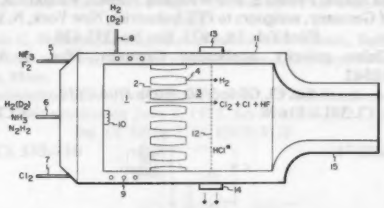
3,818,374

CHAIN REACTION HCL CHEMICAL LASER

George Emanuel, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 7, 1973, Ser. No. 339,013
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 **5 Claims**

A chemical laser having good chemical efficiency and power level produced by chain reacting in an optical cavity chlorine gas with hydrogen or deuterium gas in a compact combustion driven chemical laser. An inorganic fluorine-source gas, an inorganic hydrogen-source gas, and an inorganic chlorine-source gas are introduced into the combustion chamber of a chemical laser whereupon the hydrogen-source gas and the fluorine-source gas react to heat the chlorine-source gas and produce atomic and diatonic chlorine. Atomic and predominantly molecular chlorine gas, together with the other combustion products, are driven into the laser cavity at supersonic velocities where the chlorine gas reacts with hydrogen or deuterium gas.



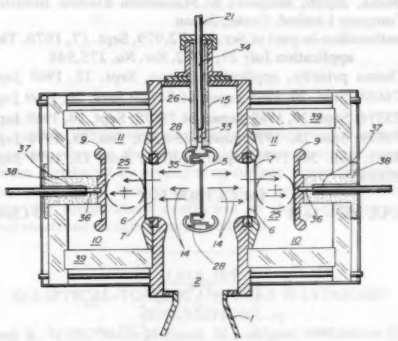
In the laser cavity a chemical chain reaction takes place in which molecules of hydrogen or deuterium react with atomic chlorine to produce ground state hydrogen chlorine or deuterium chloride and atomic hydrogen or deuterium. The atomic hydrogen or deuterium, in turn, reacts with the molecular chlorine to produce the lasing species of hydrogen chloride or deuterium chloride and atomic chloride and atomic chlorine. Laser radiation is emitted from the laser cavity transversely to the flow of gases.

3,818,375

MULTISIDED ELECTRON BEAM EXCITED ELECTRICALLY PUMPED GAS LASER SYSTEMS

Robert E. Stapleton, Los Alamos, N. Mex., and Robert O. Hunter, Jr., Riverside, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Mar. 27, 1973, Ser. No. 345,418
Int. Cl. H01s 3/02, 3/22
U.S. Cl. 331—94.5 **8 Claims**



A gas laser amplifier system having a plurality of pumping chambers spaced around the circumference of a vacuum chamber which has disposed within it an electron gun system which produces a plurality of electron beams. The electron beams are sufficiently energetic and so directed that they

produce substantial ionization through the entire volume of gaseous lasing medium that is to be electrically pumped in each pumping chamber. The system is adapted for use with lasing media at atmospheric pressure and above and is particularly useful with $He—N_2—CO_2$ gas mixtures.

3,818,376
METHOD AND APPARATUS FOR SYNCHRONIZING THE BALANCE SYSTEM OF CLOCKS OR WRIST WATCHES

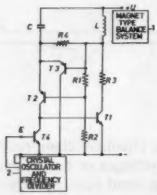
Hans Keller, Freiburg, and Wolfgang Schultz, Waldkirch, both of Germany, assignors to ITT Industries, New York, N.Y.

Filed Feb. 16, 1973, Ser. No. 333,428

Claims priority, application Germany, Mar. 4, 1972, 2210542

Int. Cl. G04c *3/00;* **H03b** *3/04, 5/30*

U.S. Cl. 331—116 M **4 Claims**



A watch pulse synchronizing circuit includes a transistor driver stage in a given circuit arrangement with a drive coil for a watch balance system and a transistor switching stage controlled by a sync pulse. The vibration frequency of the balance system is slightly higher or lower than one half of the sync frequency. The sync signal through action of the switching stage turns the driver stage on and off once for each half vibration of the balance system. Changes between the vibration and sync frequency changes the width of a primary pulse and generates a secondary pulse to charge a capacitor so that the sum of the energy of the two pulses remain constant for the output of the driver coil.

3,818,377
OSCILLATORY DEVICE UTILIZING PULSE GENERATING DIODE

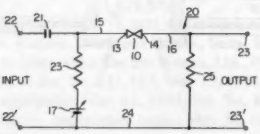
Sadahiko Yamashita; Toshi Anbe, and Yjiro Koike, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company Limited, Osaka, Japan

Continuation-in-part of Ser. No. 72,979, Sept. 17, 1970. This application July 27, 1972, Ser. No. 275,548

Claims priority, application Japan, Sept. 19, 1969 Japan 44-76058; Sept. 20, 1969 Japan 44-74765; Sept. 20, 1969 Japan 44-75574; Sept. 20, 1969 Japan 44-75578; Sept. 20, 1969 Japan 44-75579; Jan. 28, 1970 Japan 45-8300; Jan. 28, 1970 Japan 45-8301; Jan. 30, 1970 Japan 45-8776; June 15, 1970 Japan 45-52189

Int. Cl. H03c *3/22*

U.S. Cl. 332—16 R **3 Claims**



A pulse frequency modulator comprising a pulse generating diode which oscillates thereby to produce a pulse train when subjected to a bias voltage larger than a threshold voltage thereof, the repetition rate of the pulse train being varied in accordance with variation of the bias voltage, means for impressing the bias voltage on the diode, means for superposing on the bias voltage a voltage signal so as to pulse-frequency-modulate the pulse train, and means for deriving for utilization the pulse-frequency-modulated pulse train.

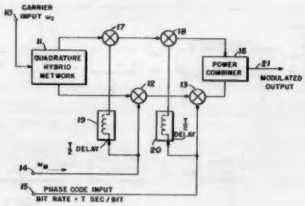
3,818,378
PHASE DERIVATIVE MODULATION METHOD AND APPARATUS

Chester C. Phillips, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 10, 1972, Ser. No. 225,357

Int. Cl. H03c *3/40*

U.S. Cl. 332—23 A **7 Claims**



A carrier frequency input is simultaneously applied to a pair of quadrature modulating paths or channels, each containing a pair of cascaded modulator or mixer circuits. In these two modulating paths, the quadrature components of the carrier input are multiplied or mixed with phase quadrature components of a modulating signal whose period is equal to twice the bit length of the input phase code data. The resultant or modulated signals are then additionally mixed with the input phase code data; the phase code input to one modulator path being shifted relative to the phase code input to the other path by one-half of the code bit length. The outputs from the two modulating paths are then recombined to produce an output signal containing no discontinuities in the time waveform.

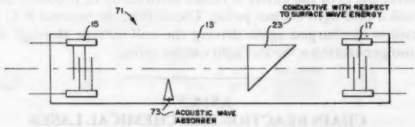
3,818,379
ACOUSTIC SURFACE WAVE DEVICE

Michael T. Wauk, II, Agoura, Calif., assignor to Hughes Aircraft, Culver City, Calif.

Filed Dec. 4, 1972, Ser. No. 312,098

Int. Cl. H03h *9/30*

U.S. Cl. 333—30 R **18 Claims**



An acoustic surface wave device for delay line and filter applications and the like, the device being of the type having spaced couplers or transducers disposed on a surface wave propagating surface of a solid medium and, in order to significantly reduce undesired and generally degrading spurious signals arising from specular reflections from the transducers, the device further includes a surface wave acoustic wavefront rotating member disposed in the path of the surface wave between the transducers.

3,818,380

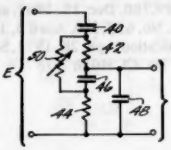
SINGLE COMPONENT CONTROLLED RC BRIDGE

Roy W. Tyre, 3069 Marganera Ter., Chamblee, Ga. 30341

Division of Ser. No. 232,565, March 7, 1972, Pat. No. 3,739,300, which is a continuation-in-part of Ser. No. 221,004, Jan. 26, 1972, abandoned, which is a continuation-in-part of Ser. No. 811,350, March 28, 1969, abandoned. This application Apr. 20, 1973, Ser. No. 353,072

Int. Cl. H03h 7/10; H03b 5/26

U.S. Cl. 333—70 CR 9 Claims



A simple economical RC circuit having a single variable element and a transfer function which is of the same character as the well known Wien Bridge. The circuit comprises two legs: the first leg comprises a resistor and a capacitor in series with a resistor or a capacitor connected in parallel across them; the second leg comprises a resistor and capacitor in series, the resistor of the second leg being connected to the capacitor of the first leg when the parallel element of the first leg is a capacitor and vice versa. In one embodiment variable resistor connects between the midpoints of the two legs when the parallel element is a capacitor or a variable capacitor connects between the midpoints if the parallel element is a resistor. The circuit is useful as a replacement for the two adjacent frequency determining legs of a Wien Bridge, for example, in a bridge-controlled oscillator, the single variable resistor or capacitor determining the resonant frequency of the circuit and therefore the oscillation frequency. Further circuits derived by reciprocity are also disclosed.

3,818,381

NON-RECIPROCATING CIRCUIT DEVICE USING A CIRCULATOR

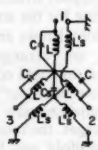
Yoshihiro Konishi, Sagamihara, and Shinsaku Takata, Yachiyo, both of Japan, assignors to Nippon Hoso Kyokai and TDK Electronics Co., Ltd., both of Tokyo, Japan

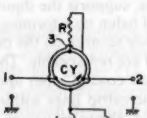
Filed May 21, 1973, Ser. No. 362,208

Claims priority, application Japan, May 24, 1972, 47-51524

Int. Cl. H01p 1/32

U.S. Cl. 333—1.1 5 Claims





A wide band circulator and a non-reciprocating circuit device using such wide band circulator, in which the symmetry of the circulator characteristics is improved by dividing at least one of either the capacitive or inductive elements forming a resonating circuit resonating with a center frequency of the operational band of the circulator and inserted between an outer conductor and ground conductor the circulator.

3,818,382

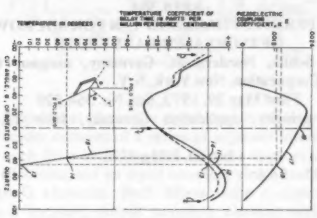
SURFACE WAVE DELAY LINE STRUCTURES HAVING REDUCED TEMPERATURE COEFFICIENT OF DELAY TIME

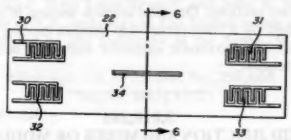
Melvin G. Holland, Lexington, and Manfred B. Schulz, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 82,250, Oct. 20, 1970, abandoned. This application June 1, 1972, Ser. No. 258,802

Int. Cl. H01p 5/14; H03h 9/30

U.S. Cl. 333—10 17 Claims





A surface vibratory wave system having signal coupling electrodes wherein the variation in electrical circuit characteristics is reduced by propagating surface waves through the delay medium in directions and/or in temperature ranges where the temperature coefficient of delay time between signal electrodes is substantially reduced.

3,818,383

ELLIPTICAL-TO-RECTANGULAR WAVEGUIDE TRANSITION

Frank R. Willis, South Holland, Ill., assignor to Andrew Corporation, Orland Park, Ill.

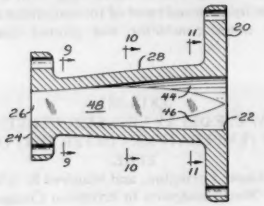
Filed Feb. 27, 1973, Ser. No. 336,195

Int. Cl. H01p 1/16

U.S. Cl. 333—21 R 9 Claims

An elliptical-to-rectangular waveguide transition has a passage of the cross-sectional shape formed by concave top and bottom walls of generally elliptical form and side walls of no concavity. The curvature of the top and bottom walls varies

continuously along the length to produce matching to the shapes at the respective ends. The side walls are those of the



rectangular end at that point and diminish to zero height at the elliptical end. Non-linear tapering of cross-sectional dimensions is employed to minimize reflections at the ends.

3,818,384

PLANAR FERRITE PHASE SHIFTER FOR MICROWAVES OF INCREASED BANDWIDTH

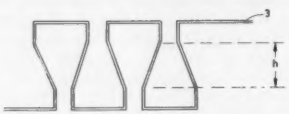
Wolfram Schilz, Norderstedt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,520

Claims priority, application Germany, June 22, 1972, 2230390

Int. Cl. H01p *1/32*

U.S. Cl. 333—24.1 **3 Claims**



A meander-like microstrip in a planar phase shifter is made of two parallel successions of straight strip sections. Each straight section has a length which is greater than the spacing between two sections. One end of each section in a succession is connected by a transverse strip section having an inclined position to the proximate opposite end of a section in the other succession.

3,818,385

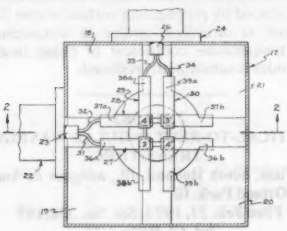
HYBRID JUNCTION AND MIXER OR MODULATOR

Robert B. Mouw, Menlo Park, Calif., assignor to Aertech, Sunnyvale, Calif.

Filed Sept. 21, 1972, Ser. No. 291,008

Int. Cl. H03h *7/42*; **H01p** *3/08*; **H02m** *5/20*

U.S. Cl. 333—26 **8 Claims**



A double balanced mixer or modulator utilizing a hybrid junction in which the junction port of the isolated arm is equally excited by two arms connected in parallel to the excited input port. The hybrid junction is formed of compensated baluns which according to one embodiment are connected together with a star arrangement of diodes to form a bias/modulation port resulting in a double balanced mixer or modulator.

3,818,386

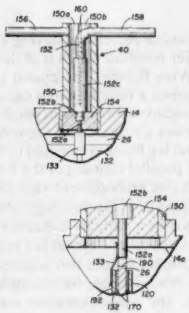
SOLID-STATE MODULAR MICROWAVE SYSTEM

Doyle S. Granberry, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 889,780, Dec. 15, 1969, abandoned, which is a division of Ser. No. 628,140, April 3, 1967, Pat. No. 3,549,949. This application Apr. 28, 1971, Ser. No. 138,356

Int. Cl. H03h *7/38*

U.S. Cl. 333—33 **11 Claims**

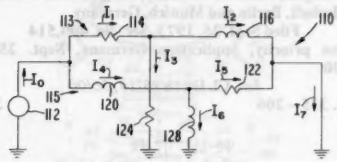


A solid-state, modular microwave transmitter-receiver assembly made up of a large number of transmit-receive modules each having an antenna. Each of the modules has functional electronic blocks mounted on both sides of a center mounting plate contained within a hermetically sealed package. The module packages generally conform to the center mounting plate and are elongated, with a greater width than thickness. The antenna extends from the front end of the module and connectors extend from the rear end. The connectors are plugged into a rear support structure and are retained in place by a series of retaining plates fastened by long screws to the rear support structure. The retaining plates also form the ground plane for the antenna array. The antennae are arrayed in horizontal rows and vertical columns, and the module packages are arranged in rows extending diagonally of the antenna rows and columns with the edges of the packages in each row abutting. A cooling fluid duct is formed between each adjacent pair of module rows by the walls of the module packages, the retaining plates and the rear support structure. A manifold and header assembly directs cooling fluid in opposite directions through alternate cooling fluid ducts. The antenna assembly of each module provides a hermetically sealed coupling between the antenna and the interior of the package, supports the dipole elements, and provides impedance and balun transforming. The functional electronic blocks are easily secured on the mounting plate by spot welded brackets and are replaceable. The hermetically sealed antenna assembly and coaxial input and output connections are connected to microstrip lines within the module by spot welded straps of solid ribbon or woven metal wire fabric, as are adjacent microstrip lines on adjacent abutting functional electronic blocks. Connections are made between functional electronic blocks on opposite faces of the mounting plate by a special coaxial structure extending through the mounting plate.

3,818,387
CURRENT GAIN FILTER

James J. Murphy, 2070 Latham, Apt. No. 4, Mountain View, Calif. 94040

Filed Aug. 2, 1972, Ser. No. 277,214
Int. Cl. H03h 7/04
U.S. Cl. 333—70 R 10 Claims

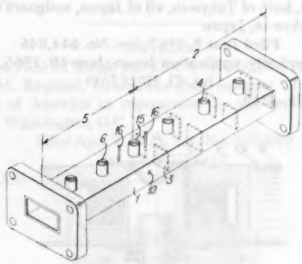


A current gain filter including an electrical circuit containing a number of passive elements which divide the current flow from a current generator into several current components whose vector sum is greater than the input current from the current generator. In one form of the invention, resistive and capacitive elements are utilized; in a second form, resistive and inductive elements are utilized; and in a third form, the circuit contains resistive, capacitive and inductive elements. For each form of the invention, a transfer function can be derived which contains several independent parameters by means of which the ratio of output current to input current and the phase angle therebetween can be calculated.

3,818,388
WAVEGUIDE FREQUENCY MULTIPLIER

Kerek Raymond Hill, Sawbridgeworth, and Jashwant Singh Dahele, Harlow, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed July 9, 1973, Ser. No. 377,355
Claims priority, application Great Britain, Aug. 22, 1972, 39084/72
Int. Cl. Ho1p 1/20; H01p 7/06; H02m 5/20
U.S. Cl. 333—73 W 11 Claims

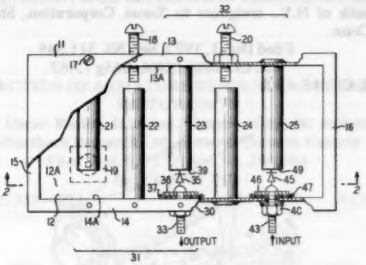


This relates to a waveguide frequency multiplier employing a waveguide having a constant cross-section throughout its length. The waveguide has either (1) a cut-off frequency between the input and output frequencies, in which case the output filter is a conventional dominant mode filter (iris coupled) and the input filter (and each of any intermediate filters) is an evanescent mode filter, or (2) a cut-off frequency above the output frequency in which case the input filter and the output filter (and any intermediate filters) are evanescent mode filters each tuned to the appropriate frequency for that stage of the multiplier.

3,818,389
DUAL INTERDIGITAL FILTER FOR MICROWAVE MIXER

Reed Edward Fisher, Parsippany-Troy Hills Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 20, 1973, Ser. No. 398,966
Int. Cl. H01p 1/20, 3/08; H02m 5/30
U.S. Cl. 333—73 R 7 Claims

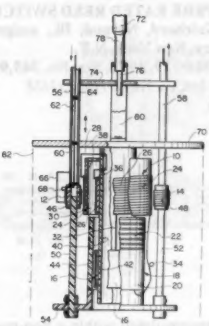


Two interdigital filters are combined in a single structure. The structure consists of a series of adjacent interdigited elements; each filter including one or more appropriately tuned high Q elements and an input coupling element at one end of the high Q elements. Both filters share a common, intermediately located, output coupling element which is connected to a load. Where the dual filter is used in a mixer circuit the individual input signals may be applied to the input coupling elements at the extreme ends of the interdigital structure and a mixing diode may be mounted at the end of the common output coupling element.

3,818,390
SUPERCONDUCTIVE TUNABLE FILTER WITH NARROW BAND AND BROAD TUNING RANGE

Emanuel Gikow, West Long Branch, and John R. Vig, Eatontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 12, 1973, Ser. No. 350,660
Int. Cl. H03j 3/22
U.S. Cl. 334—68 4 Claims



A passive, high performance, superconductive LC loop tunable over a very broad tuning range and being capable of a high degree of rejection of undesired signals and wherein inductance and capacitance are adjustable to increase or decrease together by means of a common tuning element and

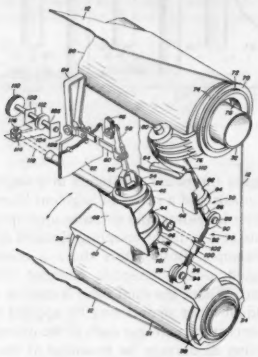
wherein the tuning element has novel configuration for minimal distributed capacitance effect on the inductance to extend the upper frequency limit of the tuner and wherein input and output impedances are relatively constant over the tuning range.

3,818,391

TRACKING ASSEMBLY FOR AN ENDLESS BELT ELECTROSTATOGRAPHIC MACHINE

William E. Jordon, Penfield, and Robert R. Wilson, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1972, Ser. No. 311,345
Int. Cl. G03g *15/00*; B65g *15/62*
U.S. Cl. 355—3 R **4 Claims**



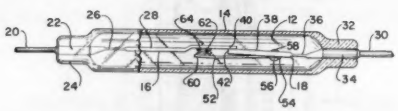
A tracking assembly for an endless belt assembly of an electrostatograph machine is disclosed comprised of a rotatable yoke assembly having a tracking roller rotatably mounted thereon, and tracking linkage assembly operatively connected to the yoke assembly. Alteration of the linkage setting of the linkage assembly causes the yoke assembly to rotate in either direction on an axis which is in the bisector plane and normal to the roller shaft thereby causing said endless photoconductive belt to be realigned about the belt assembly.

3,818,392

AMPERE RATED REED SWITCH

Robert Charles Guichard, Normal, Ill., assignor to General Electric Company, New York, N.Y.

Filed Mar. 29, 1973, Ser. No. 345,997
Int. Cl. H01h *1/66*, *51/28*
U.S. Cl. 335—154 **15 Claims**



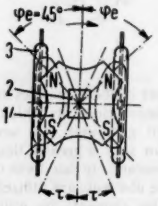
A reed switch encapsulated within a non-magnetic, electrically non-conductive housing and having first and second integrally formed ferromagnetic members extending from positions externally of said housing through opposite ends of said housing to within a chamber in said housing such that those ends of said members within said chamber overlap and form a gap therebetween when the switch is in the deactivated position. Each of the members have a constricted section adjacent the respective end of the housing so as to enable the ends of the members within the housing to bend toward each other and into engagement when the switch is activated by the application of a magnetic field thereto.

3,818,393

CONTROL UNIT FOR ELECTRONIC SYSTEM

Horst Morgott, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 25, 1973, Ser. No. 400,514
Claims priority, application Germany, Sept. 25, 1972, 2246930
Int. Cl. H01h *13/14*, *36/00*
U.S. Cl. 335—206 **3 Claims**



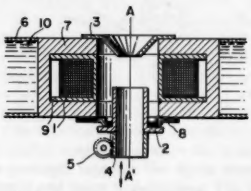
A control unit for use in an electronic system such as a matrix-shaped control field characterized by the control unit having a housing supporting a circuit board on which control elements including at least two reed switches are mounted. A shaft is supported in the housing between the pair of reed switches and supports a permanent magnet which has two pairs of poles arranged in mirror symmetry to each other. The shaft is connected by a gear arrangement to external means such as a pushbutton to rotate the shaft and the magnet in a step-wise manner between positions opening the reed switches and positions closing the switches.

3,818,394

ELECTRON LENS FOR ELECTRON MICROSCOPE AND THE LIKE

Shinjiro Katagiri, Katsuta-shi; Susumu Ozasa, Kodaira-shi; Hirokazu Kimura, Koganei-shi; Toshio Doi, and Hiroshi Kimura, both of Tokyo-to, all of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan

Filed June 9, 1967, Ser. No. 644,846
Claims priority, application Japan, June 10, 1966, 41-37085
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **9 Claims**

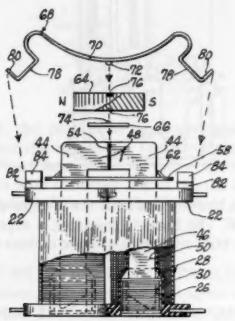


An electron lens assembly having a diamagnetic shielding member or members inserted in the central opening of a hollow, cylindrical superconducting coil, at least one of the members is movable therein along the axis of the electron beam whilst the coil and member or members are kept in a superconducting state. By this arrangement, the focal length of the lens assembly can be changed by the variation along the axis of the coil of the distribution of magnetic field strength produced by the coil.

3,818,395
CONVERGENCE ASSEMBLY FOR COLOR TELEVISION PICTURE TUBES

Albert M. Anthony, and Richard J. Anthony, both of 16 Charles St., Bangor, Mich. 49013

Filed Jan. 22, 1973, Ser. No. 325,349
Int. Cl. H01f 7/00
U.S. Cl. 335—210 **14 Claims**

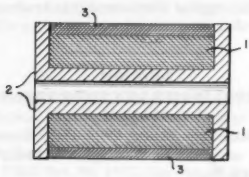


The illustrated convergence assembly is mounted on a supporting board having an opening therein for receiving the neck of a color television picture tube. A plurality of convergence units are secured to the board, which may take the form of a printed circuit board. Each convergence unit comprises a pair of bobbins having convergence coils mounted thereon. The bobbins are securely fastened to said board. Each bobbin has an axial opening in which a magnetic core member is slidably mounted. The convergence unit comprises spring means for biasing the core members inwardly so that the inner ends or poles of the core members are biased against the neck of the picture tube. In this way, the core members are always pressed firmly against the neck of the picture tube despite variations in the size of the neck. Such spring means preferably take the form of a bow spring having end portions disengageably mounted on the bobbins. The bow spring has a flexible central portion which develops the inward biasing force on the core members. A rotatable permanent magnet is preferably interposed between the bow spring and the core members.

3,818,396
SUPER STABLE SUPERCONDUCTING COIL

Steven M. Raphael, Greenbelt, Md., assignor to The United States of America as represented by the Secretery of the Navy, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,499
Int. Cl. H01f 7/22
U.S. Cl. 335—216 **5 Claims**

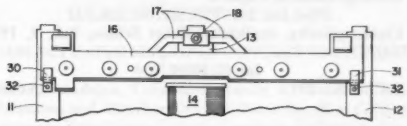


A superconducting magnet comprised of a first superconducting coil tied to a constant current source is made super stable by disposing a second superconducting coil in a manner to attain maximum flux linkage between coils. The first superconducting coil is charged from the constant current supply while the second coil is open circuited or made to be non-superconducting. When the first coil reaches the desired current, the second coil circuit is closed or allowed to go superconducting. At this time there is no current in the second coil. Thereafter, any change in reluctance due to a transient, which would usually drive the first coil normal, risking undesired heating, etc., will induce a current in the second coil which produces an equal and opposite field to that of the first coil so as to leave the net field unchanged. Thus any undesired transient current in the first coil will be resisted by the second coil.

3,818,397
REDUCTION OF ARMATURE REBOUND IN CROSSBAR SWITCH UNITS

Victor Oscar Roslin, Islington, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada

Filed Sept. 6, 1973, Ser. No. 394,564
Int. Cl. H01f 7/08
U.S. Cl. 335—271 **4 Claims**

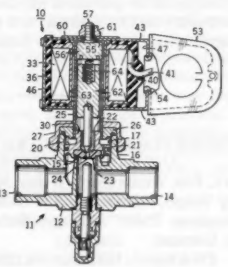


Unstable rebounding or vibration of the armature of a crossbar switch is at least substantially reduced by positioning stops approximately at the ends of the armature, instead of at the centre as hitherto. The stops can be mounted on the outer legs of the core or frame and engage with the ends of the armature. This prevents rotation of the armature about a central pivot point, as can occur with a central stop.

3,818,398
ELECTROMAGNET COIL ASSEMBLY

William J. Barbier, St. Louis, and Thomas C. Knaebel, Kirkwood, both of Mo., assignors to Sporlan Valve Company, St. Louis, Mo.

Continuation of Ser. No. 203,221, Nov. 30, 1971, abandoned. This application July 18, 1973, Ser. No. 380,285
Int. Cl. H01f 7/00
U.S. Cl. 335—278 **4 Claims**



An electromagnet coil assembly having a coil of wire wound on a spool, and an epoxy resin cover encapsulating the ends of the spool and the coil periphery. The wire winding can be of any typical configuration but can advantageously be a winding where a tap or taps are provided in the winding for using more than one voltage. A bracket includes first strip portions overlying the spool ends and the epoxy resin cover, and second

strip portions extending between the first strip portions adjacent to and on opposite sides of the periphery of the epoxy resin cover. The epoxy resin cover on opposite sides of the first strip portions is exposed and has a pattern of relatively raised and lowered surfaces to promote radiation and convection of heat away from the coil. Preferably, the relatively raised and lowered surfaces are fins and intervening grooves respectively that are provided on and extend substantially the height of a substantially arcuate periphery of the exposed epoxy resin cover. In assembly with a valve, a tube is located within the spool, the tube extending between the first strip portions of the bracket and extending outwardly beyond the spool and one of the first strip portions. A plug, located in the tube, is adjacent to the other of the first strip portions. A pair of substantially T-shaped tubular shrouds are inserted in the spool, one at each end, the shrouds engaging the tube and the first strip portions of the bracket.

3,818,399

PERMANENT MAGNET DEVICES

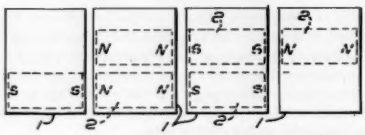
Alun Edwards, Sheffield, England, assignor to James Neill Holdings Limited, England

Filed Jan. 24, 1973, Ser. No. 326,532

Claims priority, application Great Britain, Feb. 2, 1972, 4784/72

Int. Cl. H01f 7/04

U.S. Cl. 335—295 **25 Claims**



A permanent magnet device comprising at least two pairs of aligned plate-like polepieces of ferromagnetic material such as mild steel, and at least two permanent magnets in upper and lower rows magnetised in opposite directions through their thickness, associated with and lying between the pairs of polepieces, at least one of the magnets being capable of movement relative to at least one other and relative to the pairs of polepieces from a first position where the magnets and the polepieces co-operate to provide a maximum external magnetic field strength (the ON position) to a position where the external magnetic field is reduced to substantially zero (the OFF position).

3,818,400

FILTER CHOKE FOR HIGH ELECTRICAL VOLTAGES AND LARGE OUTPUTS

Hans Linnert, Post Wintersdorf; Walter Muller, Schwabach, and Georg Weigel, Nurnberg, all of Germany, assignors to Transformatoren Union Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

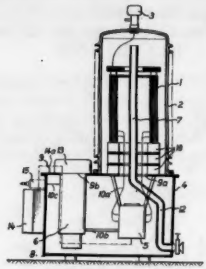
Filed Apr. 5, 1973, Ser. No. 348,090

Claims priority, application Germany, Apr. 5, 1972, 2216325

Int. Cl. H01f 27/02

U.S. Cl. 336—58 **11 Claims**

A filter choke is formed of a magnetically unshielded winding, a step selector switch electrically connected to the winding and a load selector switch electrically connected to the step selector switch. The two switches are disposed side-by-side in a tank which includes a top closure provided with an opening vertically above the step selector switch. The winding is secured externally to the closure above the opening and is surrounded by a bushing insulator made of an electrically insulating material. The bushing insulator is supported by the closure and is in axial alignment with the closure opening.



3,818,401

DISPLACEMENT ELECTRIC SIGNAL CONVERTER

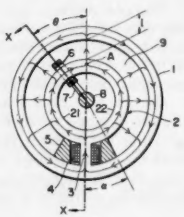
Mineju Mouri, and Katsuhiko Aoki, both of Kawasaki, Japan, assignors to Fuji Electric Company Limited, Kawasaki-shi, Kanagawa, Japan

Filed Apr. 12, 1973, Ser. No. 350,577

Claims priority, application Japan, Apr. 12, 1972, 47-36666

Int. Cl. H01f 21/00

U.S. Cl. 336—87 **7 Claims**



A displacement-electric signal converter is composed of two annular magnetic bodies coaxially disposed, a magnetizing coil provided in an air gap formed between the two annular magnetic bodies, and a detecting coil provided on one of the two magnetic bodies so that the detecting coil is rotatable around the common axis of the two magnetic bodies, said magnetizing coil is energized from an a.c. voltage source, said detecting coil is rotated in accordance with an angular displacement to be measured, whereby an electric signal corresponding to the angular displacement to be measured is obtained from the detecting coil.

3,818,402

TAP-CHANGING SERIES-MULTIPLE TRANSFORMER SYSTEM

Frank W. Golaski, Youngstown, Ohio, and Thomas J. Telega, Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

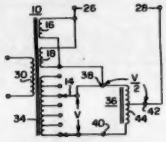
Filed May 30, 1973, Ser. No. 365,367

Int. Cl. H01f 21/00

U.S. Cl. 336—147 **5 Claims**

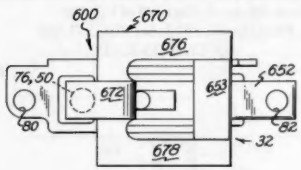
A transformer system providing proper tap changing in both the series and the multiple connection arrangements. In series operation, the regulating voltage is supplied by a regulating winding through which all of the load current flows. In multi-

ple operation, the regulating voltage is supplied across a combination of the regulating winding and an autotransformer. The autotransformer is tapped at a position which provides the desired regulating voltage corresponding to the normal series and parallel voltage ratio. A portion of the load current



flows through the portion of the autotransformer winding which is on one side of the tap. The remaining portion of the load current flows through the portion of the autotransformer winding which is on the other side of the tap and through the regulating winding of the main transformer.

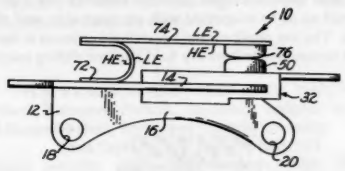
3,818,403
CIRCUIT BREAKER APPARATUS
Walter B. Ambler, Norwood, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 30, 1972, Ser. No. 302,157
Int. Cl. H01h *61/04*
U.S. Cl. 337—85 **6 Claims**



A circuit breaker device which is particularly useful with direct current such as in an automotive application comprises a main creep-acting thermostatic strip member mounted on a second auxiliary U-shaped thermostatic member, the U-shaped member being attached to the strip with the high and low expansion layers being dissimilar or reversed in order to obtain increased contact force prior to actuation and faster contact opening and in effect, greater differential after actuation. One leg of U-shaped thermostatic member is mounted on a base plate, the other leg cantilever mounts the thermostatic strip. A contact is located on the free distal end of the thermostatic strip and is adapted to move into and out of engagement with a stationary contact supported on the base plate but electrically insulated therefrom. A special insulator pad mounts the stationary contact and is received on and locked in place on the base plate. Several embodiments are shown in which the auxiliary thermostatic member is formed from the same element as the main thermostatic member.

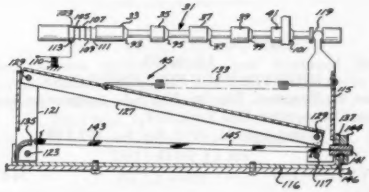
3,818,404
CIRCUIT BREAKER APPARATUS
Ronald E. Senor, Norton, Mass., and George Trenkler, East Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Oct. 30, 1972, Ser. No. 302,158
Int. Cl. H01h *61/04*
U.S. Cl. 337—85 **9 Claims**

A circuit breaker device which is particularly useful with direct current such as in an automotive application comprises a main creep-acting thermostatic strip member mounted on a second auxiliary U-shaped thermostatic member, the U-shaped member being attached to the strip with the high and low expansion layers being dissimilar or reversed in order to obtain increased contact force prior to actuation and faster contact opening and in effect, greater differential after actuation. One leg of the U-shaped thermostatic member is mounted on a base plate, the other leg cantilever mounts the



thermostatic strip. A contact is located on the free distal end of the thermostatic strip and is adapted to move into and out of engagement with a stationary contact supported on the base plate but electrically insulated therefrom. A special insulator pad mounts the stationary contact and is received on and locked in place on the base plate.

3,818,405
CAM ACTUATED MULTIPLE CONTACT SWITCHING DEVICE
Hollis L. Randolph, Lakewood; Harold A. McIntosh, South Pasadena, and Allen Lee Teichert, Placentia, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed Nov. 3, 1972, Ser. No. 303,535
Int. Cl. H01h *61/02*
U.S. Cl. 337—141 **5 Claims**

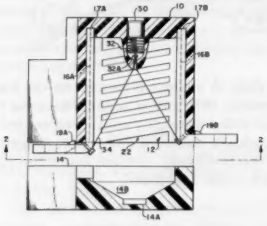


The cam actuated multiple contact switching device of the present invention includes a housing having a plurality of pairs of upstanding flexible blades mounted thereon and carrying electrical contacts from their respective free ends and arranged to urge such contacts into contact with one another. The flexible blades are arranged in a row and have a cam shaft interposed between the blades of the respective pairs, such cam shaft including symmetrical cams disposed adjacent each pair of blades and being shiftable longitudinally to cause such cams to engage the respective blades to urge the respective pairs of contacts apart. Drive means is provided for shifting the cam shaft, and such cams may be arranged in staggered relationship with respect to the flexible blades so the contacts will be sequentially closed and opened as the shaft is shifted longitudinally in opposite directions.

3,818,406
MULTIPLE FUSE DEVICE
Keith W. Klein, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,727
Int. Cl. H01h *71/20*
U.S. Cl. 337—148 **6 Claims**

A box-like enclosure with one side open is adapted to receive three pairs of generally L-shaped terminal members. Between each pair of L-shaped members conductive fusible means extends, and the remainder of the enclosure is filled

with a suitable arc-quenching material such as sand. In accordance with the invention, the L-shaped members are received and held in place in the enclosure during assembly and before the open side is closed. The means for retaining the L-shaped terminal members in place includes a pocket in the enclosure receiving one end of a corresponding terminal member, and each L-shaped terminal member has a projection formed so as to cooperate with an outer side wall of the enclosure. The net result of these positioning means is that the L-shaped terminal members are held in place during assembly



without the use of separate fastening means, whereby the fusible conducting means may be assembled between the pairs of L-shaped terminal members.

3,818,407

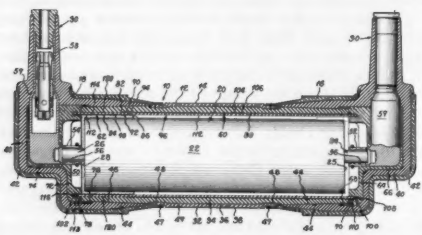
HIGH VOLTAGE FUSE ENCLOSURE

Nelson W. Edgerton, Martinsville, N.J., assignor to Amerace Esna Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,219

Int. Cl. H01h *85/02*

U.S. Cl. 337—199 **34 Claims**



A corona-preventing shielding system for use with a high voltage fuse, the system including first and second conductive shield members, each extending longitudinally from adjacent one end of the fuse toward the other and terminating short of the other end of the fuse at longitudinally juxtaposed, and preferably overlapping, portions which are spaced apart but in close enough proximity such that the shield members envelop the fuse to establish an effective corona-preventing shield, but do not contact one another to provide an alternate electrical circuit between the fuse terminals.

3,818,408

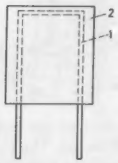
FUSE, MORE ESPECIALLY A WEAK-CURRENT FUSE FOR MOTOR VEHICLES OR THE LIKE

Ove Andersson, Habo, Sweden

Filed Sept. 11, 1972, Ser. No. 288,221

Int. Cl. H01h *85/30*

U.S. Cl. 337—206 **5 Claims**



Especially weak-current fuse comprising an electrical conductor with fusing point and surrounded by current insulating material changing its shape for sensible indicating fuse break on the outside.

3,818,409

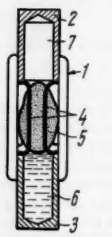
ELECTRIC CIRCUIT BREAKING FUSE

Juris Avgustovich Pastors, 37, kv. 3 ulitsa Ludzas, Riga; Andrei Andreevich Litsitis, Rizhsky raion, Selo Adazhi, Khutor Balvas, Latviiskaya SSR, and Viktor Yanovich Grislis, ultisa Daugavgrivas, 88, kv. 5, Riga, all of U.S.S.R.

Filed May 7, 1973, Ser. No. 357,709

Int. Cl. H01h *85/38*

U.S. Cl. 337—273 **8 Claims**



An electrical circuit breaking fuse intended primarily as a means of protection of semiconductor rectifiers, comprising a sealed casing with a liquid filler and leads, wherebetween a fusible element is included within the fuse casing, the fusible element being embedded in a body of a capillary-porous material immersed in the liquid filler, and part of the communicating pores of the body are in direct contact with the fusible element.

3,818,410

HIGH VOLTAGE THERMOSTAT

Charles John Hire, Pittsford, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

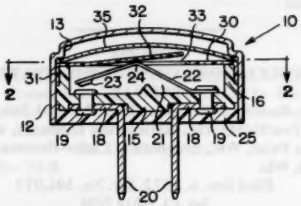
Filed Mar. 2, 1973, Ser. No. 337,693

Int. Cl. H01h *37/52*

U.S. Cl. 337—354 **3 Claims**

This thermostat comprises a cup-shaped metal cover, and a dielectric base which is secured in the open end of the cover. The base has a central chamber containing a flexible switch arm, which is secured at one end to one of a pair of terminals that are secured in the base. A flexible, dielectric cap is

mounted over the chamber in the base; and a bimetallic disc is positioned between the cap and the cover to operate the



switch arm through the cap. A tongue or flap is struck out of the cap to transmit movement between the disc and switch arm.

3,818,411

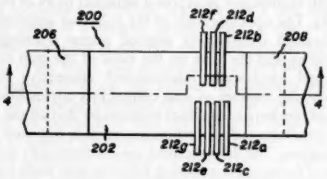
METAL OXIDE VARISTOR WITH SELECTIVELY POSITIONABLE INTERMEDIATE ELECTRODE

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 188,984, Oct. 13, 1971, Pat. No. 3,768,058. This application June 7, 1973, Ser. No. 367,963

Int. Cl. H01c *7/10*

U.S. Cl. 338—20 **7 Claims**



A metal oxide varistor is disclosed formed of a varistor body having an alpha in excess of 10 in the current density range of from 10^{-3} to 10^{2} amperes per square centimeter. First and second electrodes are laterally spaced along the varistor body, and a third electrode is located between and spaced from the first and second electrodes. The third electrode may be slidably mounted on the varistor body or may be in the form of discrete, spaced elements fixedly attached to the surface of the varistor body.

3,818,412

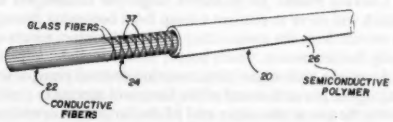
ELECTRIC CONDUCTOR AND METHOD

Lawrence R. Deardurff, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 10, 1973, Ser. No. 322,311The portion of the term of this patent subsequent to Feb. 22, 1989, has been disclaimed.

Int. Cl. H01c *3/00*

U.S. Cl. 338—214 **25 Claims**



The disclosed conductor includes a core, having a plurality of conductive glass fibers, an overwrap of non-conductive glass strands wound under tension around the core and a semiconductive overcoat, preferably of poly tetrafluoroethylene and a suspension of fine conductive powders, preferably graphite or carbon. The overwrap includes distinct windings, rather than a braid, which securely retains the fibers in a cylindrical core, having a uniform cross-section. Further, the overwrap is uniformly wound under tension to provide a matrix of uniform non-insulating apertures or diamond-shaped spaces, assuring uniform conductance between the core and the overcoat.

3,818,413

FILM RESISTOR AND METHOD OF MAKING

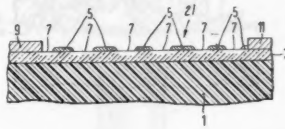
Eberhard Krimmel, Pullach, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 1, 1972, Ser. No. 285,933

Claims priority, application Germany, Sept. 17, 1971, 2146662

Int. Cl. H01c *7/00*

U.S. Cl. 338—309 **10 Claims**



Method and apparatus for producing resistors which comprise forming islands of conductive material on a very high ohmic supporting base between a pair of electrodes such that the impedance of the resistor can be adjusted to the desired value and wherein the resistor's characteristics do not change due to aging.

3,818,414

ELECTRICAL CONNECTORS

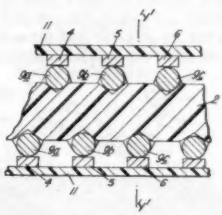
Terrence Ardern Davies, Horton, and Raymond Barber Quarmby, Great Billing, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Mar. 1, 1972, Ser. No. 230,718

Claims priority, application Great Britain, Mar. 12, 1971, 6791/71

Int. Cl. H05k *1/02*

U.S. Cl. 339—17 M **6 Claims**



An electrical connector capable of interconnecting individual electrical contacts of a first row of contacts with corresponding electrical contacts in a second row of contacts spaced apart from and substantially parallel to the first row, the connector including a support member of a resilient electrically insulating material, and a plurality of substantially C-shaped electrically conductive members formed around and secured to the support member. The C-shaped members are spaced apart along the length of the support member at a pitch which is equal to the pitch of the electrical contacts of the said

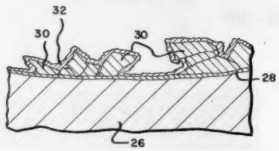
rows. In an electrical interconnection system, the electrical connector is interposed between superposed electrically insulating boards on which the first and second rows of contacts are carried, the insulating boards and the electrical connector being clamped together by at least one spring clip.

3,818,415

ELECTRICAL CONNECTIONS TO CONDUCTORS HAVING THIN FILM INSULATION

William Robert Evans, Hummelstown, and Richard Henry Zimmerman, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1973, Ser. No. 333,242
Int. Cl. H01r *9/08, 3/00*
U.S. Cl. 339—17 F **11 Claims**



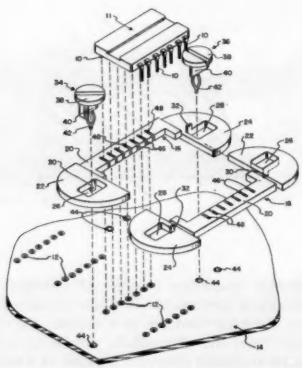
An electrical connection with a conductor having an extremely thin film type insulating covering thereon is formed by providing a terminal having a contact surface to which there is adhered fine particles of grit which are covered by a thin coating of a soft metal. The connection is made by sliding the conductor relatively over the terminal so that the film is scored and the metallic conductor is exposed. Contact between the terminal and the conductor is established through the soft metal which occupies the space between the conductor and the terminal surface.

3,818,416

DEVICE FOR SOLDERLESS CONNECTION OF ELECTRICAL COMPONENTS TO PRINTED WIRING CARDS

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Apr. 17, 1973, Ser. No. 351,937
Int. Cl. H01r *13/54*
U.S. Cl. 339—17 CF **6 Claims**



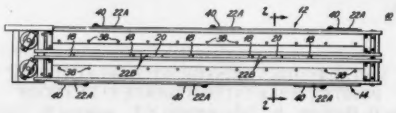
A device for connecting the leads of electrical components to plated through holes in a printed wiring card wherein two overlapping lead deflector elements are disposed such as to be laterally translatable with respect to one another. A cam locking post operates to translate the deflector elements which engage the component leads and urge them into electrical contact with the plated through holes in which the leads are inserted.

3,818,417

PHASE COLLECTOR ASSEMBLY FOR MULTIPLE RUN BUSWAY

Martin F. Koenig, Milwaukee, Wis.; Manuel Issa, deceased, late of Fox Point, Wis., and Patrick T. Sheedy, administrator, Fox Point, Wis., assignors to Cutler-Hammar Inc., Milwaukee, Wis.

Filed Nov. 6, 1972, Ser. No. 304,073
Int. Cl. H01r *7/08*
U.S. Cl. 339—22 B **8 Claims**



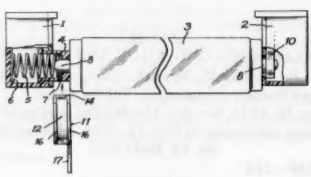
Respective bus bars of adjacent plug-in bus duct sections of a multiple busway are electrically interconnected by a removable unitary phase collector assembly which includes a plurality of stacked insulator blocks and a plurality double-ended stab connectors interposed adjacent pairs of the insulator blocks. The opposite ends of the collector assembly are inserted through transversely aligned access openings in the duct sections and the jaws on the ends of the stab connector engage and electrically interconnect respective bus bars. Preferably, the number of stab connectors corresponds to the number of bus bars in the duct sections so that all the bus bars can be simultaneously interconnected in a one-step installation operation. The duct sections are mechanically joined by a plurality of fasteners connecting adjacent side walls together.

3,818,418

LOCKING MEANS FOR SINGLE PIN FLUORESCENT LAMPS

Lewis Detch, 2133 Chalfant St., Pittsburgh, Pa. 15221

Filed June 7, 1973, Ser. No. 367,871
Int. Cl. H01r *33/10*
U.S. Cl. 339—54 **10 Claims**



Locking means for so-called single-pin fluorescent lamps which will serve to prevent a lamp from becoming disengaged in service from the cooperating electrical contact means of the lamp holder means, which holder means include; adjacent to at least one end of the lamp, a spring-pressed plunger for engaging the pin at that end of the lamp and serving to resiliently force the pin at the other end of the lamp into operative engagement with the electrical contact means of the lamp holder at such other end, said locking means comprising an inherently pliable jaw-like member for removable snap-engagement with the protruding, pin-engaging, end of the said plunger, and having a dimension axially of the lamp to sub-

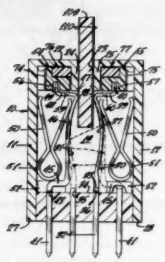
stantially fill the space between the end of the lamp and the adjacent face of the plunger-carrying lamp holder, whereby to prevent retraction of the plunger and possible release of the lamp pin ends from operative engagement with the lamp holders.

3,818,419

ZERO INSERTION FORCE ELECTRICAL CONNECTOR

Merlin L. Crane, Banning, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Filed Jan. 15, 1973, Ser. No. 323,430
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R **21 Claims**



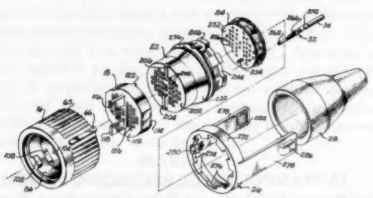
An electrical connector for a printed circuit board or the like that includes a dielectric body having a slot adapted to admit the edge of a printed circuit board, a row of opposed sring-biased contacts positioned on either side of the longitudinal axis of the body, and an actuating means that includes a cam arrangement which can retract the contacts away from the axis for allowing insertion of the printed circuit board and release of the contacts so that the spring force can cause the contacts to engage the conductors of the printed circuit board, and a lock means for holding the printed circuit board within the connector, the lock means also preventing contact engagement with the printed circuit board prior to full insertion of the printed circuit board into the body.

3,818,420

LOW INSERTION FORCE ELECTRICAL CONNECTOR

John E. Barr, Van Nuys, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,755
Int. Cl. H01r *13/54*
U.S. Cl. 339—90 R **8 Claims**



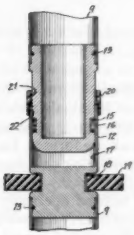
A low insertion force connector having a pair of connector members each with a plurality of contacts therein. One of the connector members is formed of a stationary insulator and an activating disc, the activating disc being formed with a cammed surface. The insulator has a plurality of axially alined bores with contacts mounted therein. A shell member has a cam actuating member therein with rotation of the shell member causing the cam actuating member to move with respect to the activating disc and to move the activating disc with respect to the axis of the bores and coupling the contacts in the connector members together. An interlock may be formed on the shell member for allowing the connector members to be correctly positioned prior to electrically connecting the contacts together. Further, a sealing device may be formed between the shell member and the electrical connector member on which it is mounted. Moreover, a novel grommet provides a tight seal at the rear of the connector members. Also, a cable clamp ring is removably secured to the rear of the connector members for attachment to the cable conductors.

3,818,421

CONNECTION FOR RIGID COAXIAL TRANSMISSION LINE

Jack L. Kruger, Goffstown, N.H.

Continuation of Ser. No. 242,543, April 10, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 390,746
Int. Cl. H01r *13/16*
U.S. Cl. 339—177 R **7 Claims**



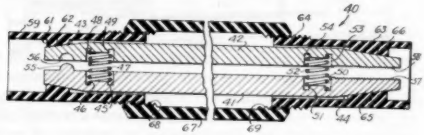
This disclosure relates to connectors used in joining rigid inner sections of high energy conducting coaxial transmission lines and distinguishes over the existing state of the art by providing a one contact surface joint which, while permitting the desired axial expansion and contraction movements inherent in those structures, avoids the well known problem of galling dust accumulations by including as an integral part of the connector, a receptacle for capturing this dust and associated particle matter.

3,818,422

ELECTRIC CABLE CONNECTOR

John R. Pertuit, P.O. Box 445, Luling, La. 70070

Division of Ser. No. 116,761, Feb. 19, 1971, Pat. No. 3,693,138. This application Aug. 29, 1972, Ser. No. 284,497
Int. Cl. H01r *5/12*
U.S. Cl. 339—202 **7 Claims**



An electric cable connector which will accept cable ends of the type having a connector lug secured thereto. The connector lugs are clamped into a conducting body portion which is covered by a cylindrical insulating cover detachably secured thereon. The body is split and is forced together by rotating the insulator sleeve with respect to the body.

3,818,423

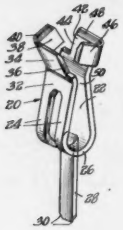
INTEGRATED CIRCUIT TERMINAL AND METHOD

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex, Incorporated, Downers Grove, Ill.

Continuation-in-part of Ser. No. 880,574, Nov. 28, 1969, Pat. No. 3,673,551. This application Feb. 25, 1972, Ser. No. 229,471

Int. Cl. H01r *13/12*

U.S. Cl. 339—258 P **7 Claims**



A sheet metal terminal is formed of spring metal such as brass with a plurality of terminals attached to one another in chain fashion by a carrier strip of scrap of the metal blank from which the terminals are formed. Each terminal is open at an end and has a mounting lug or tongue at its opposite end. The lugs or tongues of a plurality of interconnected terminals are inserted through aligned apertures in a pair of parallel rows in a printed circuit board, following which the terminals are flow soldered to the printed circuit board, and the scrap interconnection is cut off. A pair of rows of terminals thus is provided into which the terminals of a "crab pack" integrated circuit may be plugged.

3,818,424

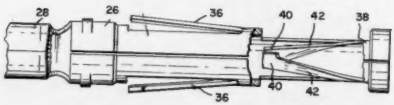
ELECTRICAL CONTACT SOCKET HAVING IMPROVED CONTACT SPRING

William Robert Evans, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 21, 1972, Ser. No. 274,124

Int. Cl. H01r *13/12*

U.S. Cl. 339—258 T **4 Claims**



Stamped and formed electrical contact socket which is adapted to receive a contact pin has an improved integral contact spring in the form of a cantilever formed from the body of the socket and extending inwardly and obliquely towards the socket axis. The cantilever has a generally helicoid surface so that upon insertion of the pin, the cantilever is flexed in torsion to provide increased contact force for a given spring length material.

3,818,425

NAVIGATION SYSTEMS UTILISING THE DOPPLER EFFECT

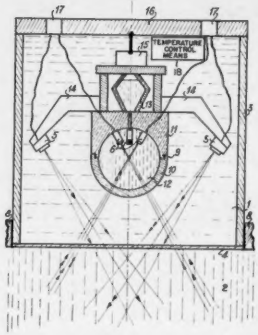
Francois Peynaud, and Gilles Posseme, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 12, 1972, Ser. No. 314,471

Claims priority, application France, Dec. 17, 1971, 71.45501

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **6 Claims**



Doppler sonar navigation system, comprising an on-board acoustic waves transmit and receive sound transducer device; transmission and reception take place in a manner known per se in four directions with beams equally inclined in relation to the vertical and located in two mutually perpendicular planes, the receiving electro acoustic transducer elements being located upon the focal sphere of a spherical acoustic lens. The assembly is enclosed within a casing filled with a fluid medium having a known ultrasonic wave propagation velocity dependent on the fluid temperature, the latter being controllable. The sound transducers are directed towards casing base which is transparent to the ultrasonic waves. The casing is secured to the vessel hull and said base is in contact with supporting water.

The invention is applicable primarily to Doppler sonar, in particular for the measurement of the speed of a marine vessel independently of variations in the velocity of propagation of sound through water.

3,818,426

ULTRASONIC IMAGE RECORDING SYSTEM

Dieter Bonnet, Eschborn, and Helmut Rabenhorst, Frankfurt-Niederrad, both of Germany, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Feb. 1, 1972, Ser. No. 222,578

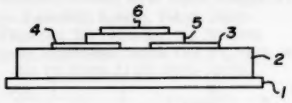
Claims priority, application Germany, Feb. 17, 1971, 2107555

Int. Cl. H04b *11/00*

U.S. Cl. 340—5 MP **5 Claims**

An ultrasonic image recording system comprising a thin layer piezoelectric material for exposure to a field of ultrasonic radiation to be imaged and defining an image record-

ing surface. A plurality of thin film field-effect transistors are distributed in an array on the piezoelectric material and are



electrically connected in a crossbar arrangement to derive signals in succession from image points of the image recording surface.

3,818,427

PROCESS FOR RECORDING ACOUSTIC, SYNTHETIC AND MICROWAVE HOLOGRAMS

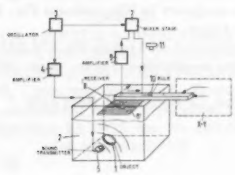
Dietlind Pekau, Krailling, and Reiner Diehl, Bremen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 1, 1973, Ser. No. 328,742

Claims priority, application Germany, Feb. 16, 1972, 2207279

Int. Cl. G03b *41/00*

U.S. Cl. 340—5 H **8 Claims**



The process of recording acoustic, synthetic and microwave holograms in which the object wave field emanating from an object is scanned point by point and row by row by a receiving transducer which produces electrical output signals which are transformed into light signals that are recorded as holograms on a light sensitive medium in rows characterized by displacing every second row with respect to every first row in a direction parallel to the rows of the light signals being recorded to improve the signal to noise ratio of an image reconstructed from the hologram. Preferably, the displacement between adjacent rows is less than the resolving power of the reconstructed image of the hologram.

3,818,428

SAFETY LIGHT

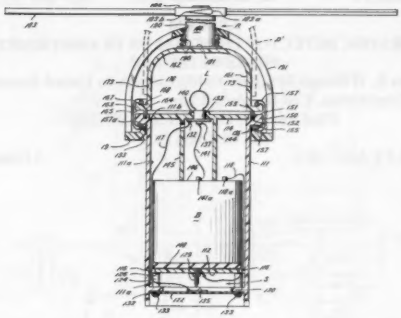
Andrew J. Phipps, and Donald C. Howell, both of P.O. Box 793, Kilgore, Tex. 75662

Continuation-in-part of Ser. No. 46,111, June 15, 1970, abandoned. This application Nov. 10, 1971, Ser. No. 197,377

Int. Cl. B63b *45/00*

U.S. Cl. 340—29 **1 Claim**

The specification discloses a floating marine safety light having a pressure actuated switch which enables the light to be carried or stored in an upright position with the circuit open and which will make contact to close the electric circuit to illuminate a safety light when the light is immersed in water. Further, the invention includes means for compensating pres-



sure changes in the light to prevent accidental actuation of the pressure switch due to thermal fluctuations. The invention also includes means for impeding or retarding descent of the safety light when dropped from high elevations, such as from a low flying aircraft.

3,818,429

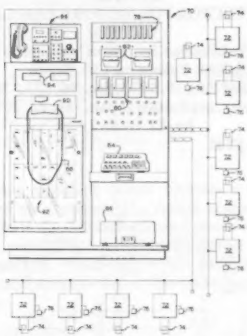
MULTI-INTERSECTION TRAFFIC CONTROL SYSTEM

Jerome W. Meyer, Santa Clara, and Phillip A. Annen, Sunnyvale, both of Calif., assignors to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 166,915, July 28, 1971, abandoned. This application Nov. 8, 1971, Ser. No. 196,312

Int. Cl. G08g *1/08*

U.S. Cl. 340—35 **35 Claims**



A master traffic control system including both methods of and apparatus for selecting, from a plurality of pre-recorded programs, a particular program to control the energization of traffic lights at a number of intersections. The program may be chosen in response to various traffic parameters computed from signals supplied by vehicle detectors, or by the time of day, as determined by selective programming of the master controller. The traffic parameters are represented as an analog voltage cumulatively variable with changes in traffic activity, and the traffic control program may be selected in accordance with various selected averages, ratios and ranges of the computed parameters. Novel circuitry is also provided for accomplishing various functions in the master controller, such as monitoring the detector inputs, providing the analog output

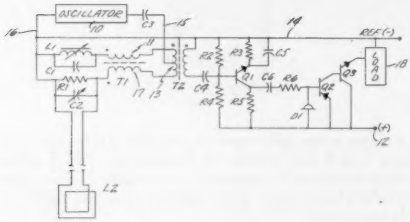
voltage representing the traffic parameters, averaging the voltages, etc. Various indicating devices receive outputs from control system values and operations to provide visual displays and printed records of traffic parameter values, program identifications, etc.

3,818,430

TRAFFIC DETECTOR USING BALUN TRANSFORMER PHASE DETECTOR

John E. Williams, San Jose, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 30, 1973, Ser. No. 355,398
Int. Cl. G08g 1/01
U.S. Cl. 340—38 L **3 Claims**



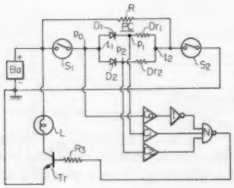
A traffic detector is disclosed in which an output is produced when a metal object is in proximity to a coil implanted in a roadway. The coil is part of a resonant sensing circuit and is excited by the same oscillator that excites a resonant reference circuit. The phase change between the two circuits caused by the presence of an object near the coil is passed by a balun transformer phase detector and fed to a level detector which produces an output when a predetermined signal threshold is exceeded.

3,818,431

FAULT DETECTOR FOR MOTOR VEHICLE SAFETY DEVICE

Akio Hosaka, Yokohama City, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Feb. 20, 1973, Ser. No. 333,526
Claims priority, application Japan, Feb. 23, 1972, 47-21615
Int. Cl. G08b 21/00
U.S. Cl. 340—52 H **6 Claims**



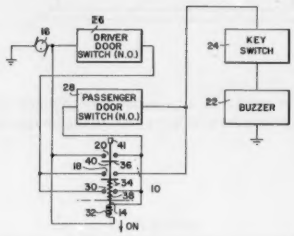
Detection of fault or failure in safety device actuator is accomplished by measuring voltages appearing at given points in the actuator circuit in case of failure therein, and by comparing the measured voltages by means of comparators forming a logic circuit so as to produce a logic circuit output signal therefrom to give a warning in response to the logic circuit output signal. The voltages appearing at the points are about nought or alternatively a source voltage. Only one resistor is used for applying bias voltages to the points. The electric power source is grounded at its positive or negative terminal.

3,818,432

AUTOMOBILE WARNING-BUZZER SUPPRESSOR

Edward Keating, 17517 Catalina Ave., Gardena, Calif. 90248

Filed June 26, 1973, Ser. No. 373,676
Int. Cl. B60q 5/00
U.S. Cl. 340—52 D **1 Claim**



A device that surpresses the warning buzzer circuit of an automobile and maintains warning circuit in the off condition by means of a solenoid until the driver's door opens or until all other doors are closed, at which time the buzzer circuit returns to its normal state.

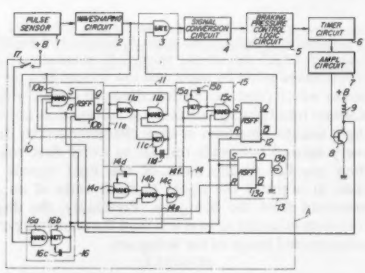
The invention employs electronic means to hold the circuit open.

3,818,433

CHECKING SYSTEM FOR VEHICLE EQUIPMENTS

Atsutoshi Okamoto, Toyohashi, and Akio Sugiura, Nagoya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 7, 1971, Ser. No. 178,243
Claims priority, application Japan, Sept. 25, 1970, 45-84492
Int. Cl. B60q 1/00; B60t 8/08
U.S. Cl. 340—53 **8 Claims**



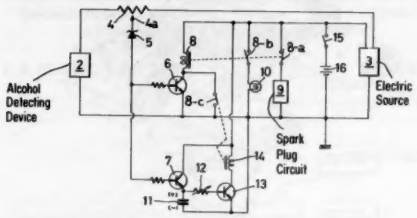
In a vehicle equipment including a signal source for representing an instant vehicle condition, an electrical circuit for producing a signal corresponding to a predetermined condition and electromagnetic means for operating a mechanical actuating means, a checking system for the vehicle equipment comprises a logic circuit for applying a check signal originated from said signal source to energize said electromagnetic means in a very short period so as not to actuate said mechanical actuating means, and a warning device operable upon receipt of said check signal.

3,818,434

APPARATUS FOR PREVENTING A MOTORCAR FROM BEING DRIVEN BY A DRUNK DRIVER

Masanori Gotoh, Tokyo; Tadao Hirano, Kawage-machi; Sadasuke Toda, Suzuka; Katuo Okugawa, Suzuka, and Kazutaka Monden, Suzuka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 300,996
Claims priority, application Japan, Oct. 27, 1971, 46-84639
Int. Cl. G08b *21/00*; B60r *18/00*
U.S. Cl. 340—53 6 Claims



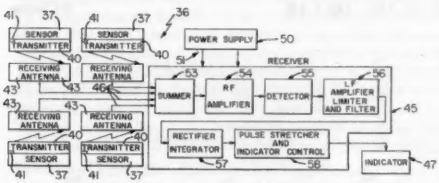
An apparatus for preventing a motorcar from being driven by a drunk driver in which a detecting device for detecting the alcohol content contained in the breath of the driver is mounted within the passenger compartment in front of the driver. Upon operation of the detecting device, the motorcar is rendered inoperative. There is also provided a release device adapted to be rendered operative a predetermined period of time after the detecting device no longer detects the alcohol content, so that upon operation of the release device, the motorcar is rendered able to be driven.

3,818,435

LF AMPLIFIER, LIMITER, AND FILTER SYSTEM FOR A RECEIVER OF A PNEUMATIC TIRE LOW PRESSURE MONITORING AND WARNING SYSTEM

Charles E. Hill, Lynn, and William R. Brobeck, Richmond, both of Ind., assignors to Avco Corporation, Richmond, Ind.

Filed Sept. 15, 1972, Ser. No. 289,699
Int. Cl. B60c *23/04*
U.S. Cl. 340—58 7 Claims



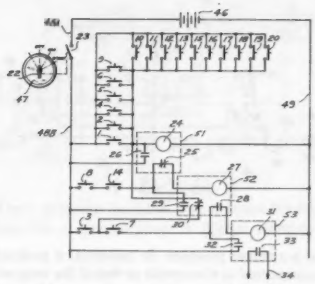
An amplifier, limiter, and filter circuit having an improved pass-band and a pneumatic tire low pressure monitoring and warning system using same is provided. The circuit comprises a multiplicity of transistors operatively connected to define stages of amplification, limiting and filter means for attenuating signals on both sides of the pass-band. The circuit includes improved limiters which in combination with the band-pass characteristics of the amplifier serves to restrict the output signals outside the LF pass band to a level which is too low to provide a warning indication. The last downstream transistor has a resistor in a circuit connected to its collector electrode and another resistor connected between its emitter and ground thereby enabling this transistor, serving as an active filter, to provide both amplification and a high pass filtering action.

3,818,436

ELECTRICAL ANTI-THEFT SYSTEM

Young C. Hong, 42-52 Union St., Flushing, N.Y. 11355

Filed May 30, 1973, Ser. No. 365,260
Int. Cl. B60r *25/00*
U.S. Cl. 340—64 2 Claims



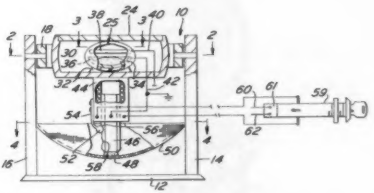
An electrical anti-theft system comprising a circuit of electrical relays, and momentary contact pushbuttons which are connected in such a manner as to apply the theories of mathematical combination and probability to an anti-theft mechanism by means of an electric circuit.

3,818,437

ANTI-THEFT DEVICE FOR AUTOMOTIVE VEHICLES

Carlo DiMarco, 415 Shunk St., Philadelphia, Pa. 19148

Filed Apr. 2, 1973, Ser. No. 347,014
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 4 Claims



An automotive anti-theft device includes a tilt actuable switch mounted on a gimbal. The switch actuates an alarm when the vehicle is tilted from its parked position. The switch aligns with the vertical by rotating on its gimbal mount when the vehicle is parked. The switch is then fixed in position by bringing a solenoid actuator into frictional engagement with a friction surface.

3,818,438

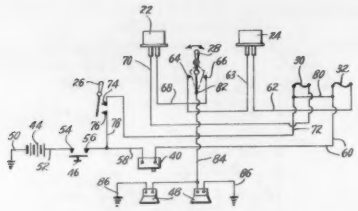
VEHICLE BACK-UP WARNING SYSTEM

Joe Stacha, Jr., Longview, Tex., assignor to R. E. Blount, Longview, Tex., a part interest

Filed July 6, 1972, Ser. No. 269,458
Int. Cl. B60q *1/26*
U.S. Cl. 340—70 4 Claims

A tamper-proof back-up, electrical warning system particularly for use on heavy vehicles such as tractors, road scrapers, motor graders, material handling equipment, and the like, to provide an audible signal to warn persons standing to the rear of such vehicle of backward movement of the vehicle. The electrical warning system has two flasher units and two signal circuits rendered selectively operable by a manual selector

switch and arranged so that if one of the flasher units and audible signal circuits should fail, the other can be used. The signal circuits are selectively connected in series with the ignition switch and with a magnetically operated switch that is automatically closed by manual movement of the vehicle shift lever into a reverse position. In addition, a manual by-pass switch is connected in the circuit so that if the magnetic switch operated by the shift lever becomes inoperable, the warning system can be independently activated manually at the time the operator shifts the lever into reverse.



3,818,439

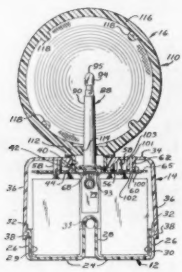
WARNING LIGHT ASSEMBLY WITH MODULARIZED INSERTS

Robert W. Maine, Cerritos, Calif., assignor to Work Area Protection Corp., Addison, Ill.

Filed Apr. 11, 1972, Ser. No. 243,029

Int. Cl. B60q *1/52*

U.S. Cl. 340—81 R **26 Claims**



An improved warning light assembly of the type providing an intermittent flashing warning light which includes a top case member and a bottom case member which are snap-fittingly engageable, a unitary lens ring member having lock means formed integrally therewith, the lens ring being so constructed as to snap-fittingly lock into position in the case member, the top case member also being provided with a series of three metallic pins extending through the case interiorly of the light housing, a circuit platform including an electrical candle mounted in breakaway relationship with respect to the platform, and the platform being provided with at least two electrically conductive metallic strips to provide an electrical circuit between the electrical candle and the power source, the circuit platform further including apertures in lineal alignment with the metallic strips whereby the metallic pins extending through the case may contact and establish electrical communication with the metallic strips, the metallic pins thereby providing external test points for both the electrical candle and the power source.

3,818,440

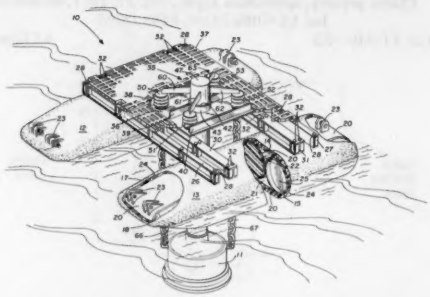
SEISMIC ENERGY GENERATOR FLOAT

Clifford D. Dransfield, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 8, 1972, Ser. No. 313,547

Int. Cl. H04b *13/02*; B63b *21/56*

U.S. Cl. 340—8 S **11 Claims**



A float for carrying a seismic energy generator includes two side-by-side float assemblies, each of two enclosed tubes tapered at their front ends to facilitate towing, and wrapped lengthwise with a fiberglass sheet. The edges of the sheet and exposed surfaces are filled and coated with a tough coat to present a smooth surface. The two float assemblies are interconnected with braces, which support a deck and a mounting platform from which the seismic energy generator is suspended.

3,818,441

KEY INPUT CIRCUIT SYSTEM FOR ELECTRONIC APPARATUS

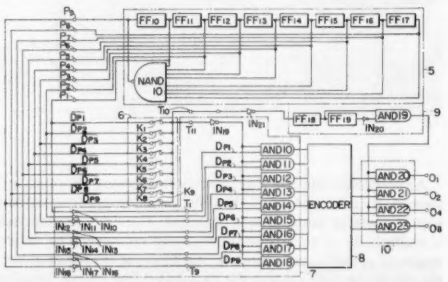
Kosei Nomiya, and Takao Tsuiki, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 295,839

Claims priority, application Japan, Dec. 29, 1971, 46-3477; Oct. 8, 1971, 46-78653; Oct. 8, 1971, 46-78659; Oct. 13, 1971, 46-80141

Int. Cl. G06f *11/00*; H03k *13/32*

U.S. Cl. 340—146.1 AB **9 Claims**



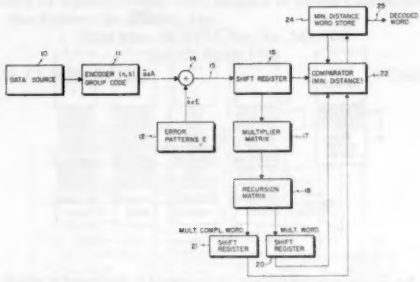
A novel key input circuit used for electronic apparatus and having a plurality of push-button switches which are operated so as to produce desired information to be fed as an input to the electronic apparatus. The key input circuit comprises a timing pulse generating section, a key switch section having a plurality of key switches, a key input signal gating section, an encoder section, a start pulse generating section and a key

input reading section. The sections are so arranged and designed that the occurrence of erroneous signals fed as input signals may be precluded for attaining the enhanced speed of key switch operation even when more than two key switches are operated simultaneously or consecutively.

3,818,442
ERROR-CORRECTING DECODER FOR GROUP CODES

Gustave Solomon, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Nov. 8, 1972, Ser. No. 304,788
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **13 Claims**



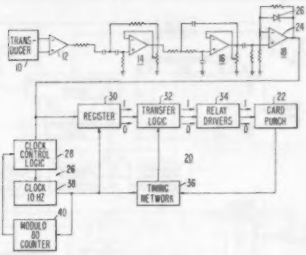
A multiple error-correcting decoder for group codes. The decoder does not attempt to determine error positions in the transmitted group code word, instead the transmitted code word or vector is operated on by a multiplier or mask so as to blank out or obliterate possible error positions. Subsequently, the code word is reconstituted by a recursion relation. Finally the Hamming distance between all the newly generated code vectors and the received code word is calculated, and the new vector with the least Hamming distance is selected as the most likely original code word. The decoder can be realized either by a simultaneous decoder or by a cyclic decoder. It can be shown that such a multiplier exists for group codes over an algebraic finite field and a procedure is disclosed for realizing such a multiplier. The recursion relation may be built into the multiplier so that in a single step the received vector can be multiplied and reconstituted. The new decoder has the advantage of great flexibility. It requires a minimum of hardware and decoding can be effected at the rate of 300 megabits per second.

3,818,443
SIGNATURE VERIFICATION BY ZERO-CROSSING CHARACTERIZATION

Arthur J. Radcliffe, Jr., Ann Arbor, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 28, 1972, Ser. No. 248,414
Int. Cl. G06k *1/08, 9/00*
U.S. Cl. 340—146.3 SY **2 Claims**

A method and apparatus for establishing a representation of a standard signature from a plurality of substantially identical signatures wherein said representation is to be used on an identification card. The signature pattern of pressure levels is convolved into a pattern which is a representation of the probability curve that at a predetermined time in a signature

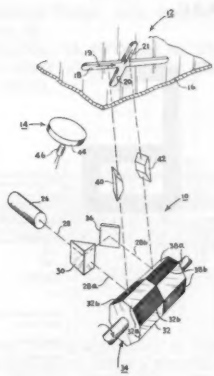


there will be a pressure increase. The method for establishing a data base for a special purpose digital computer is also taught.

3,818,444
OPTICAL BAR CODE READING METHOD AND APPARATUS HAVING AN X SCAN PATTERN

Richard Allen Connell, Wilton, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed June 29, 1972, Ser. No. 267,443
Int. Cl. G06k *7/14*
U.S. Cl. 340—146.3 F **4 Claims**



An optical code reader employs a flying spot scanner repetitively tracing an X scan pattern to read a linear bar code printed on a ticket regardless of ticket orientation during movement therepast, wherein the height of the bar code exceeds its length by an amount dependent on the scan pattern repetition rate and the ticket velocity.

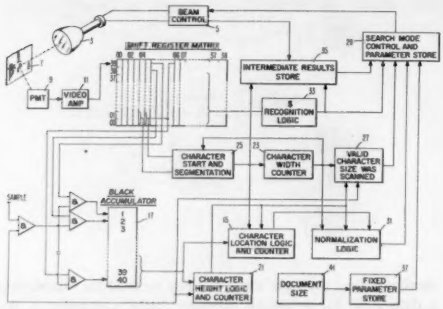
3,818,445
CHARACTER DATA SEARCH SYSTEM

Richard G. Neville, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,315
Int. Cl. G06k *9/02*
U.S. Cl. 340—146.3 H **5 Claims**

A character data search system which utilizes a plurality of small area scans which are located according to the probability that the field containing the desired information to be recognized is in a given location on the documents. Further-

more, the field is recognized by indicating key characteristics contained therein. The scanning of the field is of a multiple scan type and the scans may partially overlap each other de-



pending upon the characteristics being searched for and the probability of finding the desired data in a given location. Also, for documents of varying size, the location of the scans may be made a function of document size.

3,818,446

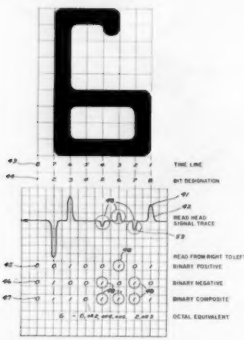
MAGNETIC INK CHARACTER TRANSITION READER

David A. Benson, Eden Prairie, Minn., assignor to Cavcom, Inc., Minneapolis, Minn.

Filed Feb. 20, 1973, Ser. No. 333,809

Int. Cl. G06k *9/13*

U.S. Cl. 340—146.3 C **3 Claims**



Magnetically saturated, magnetic ink characters on a check blank are passed by a mechanical check handler under a magnetic read head. A positive signal is generated in the head each time it moves into a segment of more ink, and a negative signal is generated each time the head moves into a segment of less ink. The magnitude of these signals depends upon the magnitude of the difference in the amount of ink detected by the magnetic read head as it makes the transition from one segment of each character to the next. The coding of the magnetic characters is such that a plurality of adjacent segments vary abruptly in magnitude. However, the magnitude of the change between some adjacent segments and consequently the magnitude of the transition signals, will be substantially smaller than the magnitude between other adjacent signals. These smaller, weaker signals can sometimes be lost. Each character in which such smaller signals and hence the possibility of errors can occur is identified by a plurality of composite binary codes, each one representing one of the possible signal combinations resulting from the loss or capture of every possible combination of weak signals. In some cases the same composite binary code represents more than one character. In these cases, direction (positive or negative) of the signals generated by the read head is used to differentiate between such signals to unambiguously identify the particular character.

3,818,447

PRIORITY DATA HANDLING SYSTEM AND METHOD

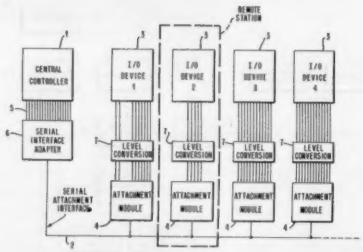
David John Craft, Chandlers Ford, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1973, Ser. No. 342,239

Claims priority, application Great Britain, Apr. 21, 1972, 18552/72

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 LP **12 Claims**



An access control system and method is disclosed in which a plurality of communication stations contend for access to a communications channel. Each remote station is provided with a priority access number and with a means for comparing its number with those of any contending stations then requesting access to the communication channel to determine which station will be given first access thereto.

3,818,448

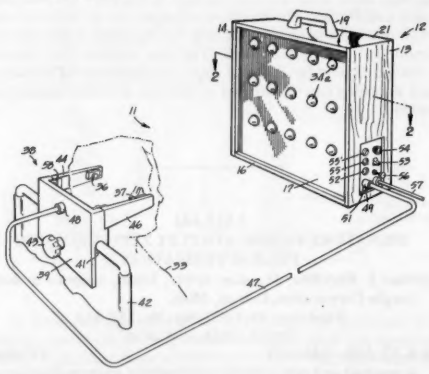
COMMUNICATIONS APPARATUS FOR NON-VERBAL HANDICAPPED PERSONS

Robert L. Wilkins, 2163 Marsh Ave., Pittsburgh, Calif. 94565

Filed Mar. 26, 1973, Ser. No. 344,832

Int. Cl. G08b *7/06*

U.S. Cl. 340—147 R **5 Claims**



A portable apparatus provides for indication of needs, answering of questions and expression of other data by persons

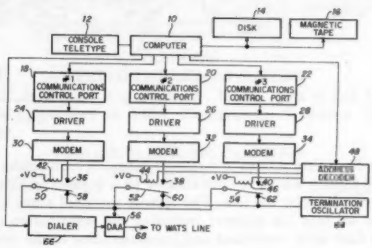
who are unable to speak and unable to make use of sign language or other conventional communicating techniques. A cabinet has arrays of indicator lamps and has acoustical devices together with circuit means connectable with switches which are operated by movement of some portion of the person's body to energize selected lamps, combinations thereof, or the acoustical devices. In one mode of operation, repeated actuations of one switch lights successive lamps in a first row while another switch similarly controls a second row. In another operational mode, one switch selects a particular row of lamps while another switch selects a particular lamp in the selected row. Preferably more than one actuation of the switches is required to progress from one lamp to the next or from one row of lamps to the next row to reduce errors from involuntary movements.

3,818,449

COMMUNICATIONS PROCESSOR SYSTEM HAVING TIME SHARED CONTROL DEVICES AND DIALERS

Barry M. Epstein, Dallas, Tex., assignor to Action Communication Systems Inc., Dallas, Tex.

Filed Mar. 28, 1973, Ser. No. 345,704
Int. Cl. H04q *3/00*
U.S. Cl. 340—147 CN **9 Claims**



A communications processor system wherein a message-switching digital computer controls the transmission of digital data between terminals connected along at least one communications line. One embodiment of the invention includes a plurality of communication control devices connected to the computer for transmitting digital messages output from the computer, each of the control devices having different operational characteristics. A switch is operable to selectively connect the output of any one of the control devices to a single communications line, such that the benefit of the operational characteristics of any of the communications control devices may be selectively obtained. A single dialer is used to provide dialing signals for all of the control devices. In another embodiment of the invention, a plurality of communication control devices are connected through modems and interfacing devices to a plurality of communications lines. A single dialer may be selectively switched through any of the interfacing devices, such that the dialer is time shared between the various communications control devices.

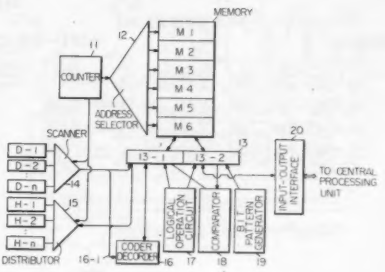
3,818,450

CONTROL SYSTEM OF AN ELECTRONIC EXCHANGE AND A COMMON CHANNEL SIGNAL CONTROLLER FOR AN ELECTRONIC EXCHANGE

Yukio Nakagome, Yokohama; Hiroichi Teramura; Yasuo Fukata, both of Tokyo; Hiromichi Mori, Lawasaki, and Shoichi Sugita, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,309
Claims priority, application Japan, May 22, 1972, 47-50522
Int. Cl. H04q *5/00*
U.S. Cl. 340—147 R **2 Claims**

A control system of an electronic telephone or telegraph exchange for a common channel signalling system in which an exclusive data channel for the signal for each speed channel is commonly provided. The control facility of said electronic exchange is shared by a common channel signal controller and a central processing unit. The former processes signal relating mainly to the transmission of signal such as serial-parallel conversion, error check, etc. while the latter processes signal relating to the copy. Said common channel signal controller comprises memory system and operates on time divisional basis.

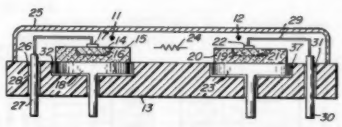


3,818,451

LIGHT-EMITTING AND LIGHT-RECEIVING LOGIC ARRAY

Michael G. Coleman, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Mar. 15, 1972, Ser. No. 234,798
Int. Cl. G02f *1/00;* **H01j** *31/50;* **H03k** *19/14*
U.S. Cl. 340—166 EL **12 Claims**



A logic array having a plurality of light emitters, each emitter producing light of one of a plurality of wavelengths in response to an input electronic signal. The light emitted, of one of a plurality of wavelengths, is detected by at least one of a plurality of light receivers, responsive to the one wavelength. The output of each of the light receivers can be combined to produce an output electronic signal when predetermined ones of the light receivers respond to the emitted light.

3,818,452

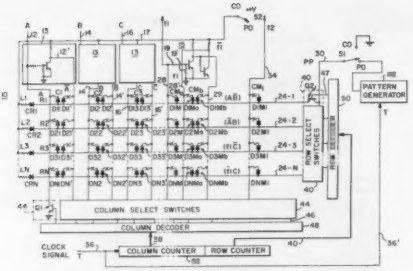
ELECTRICALLY PROGRAMMABLE LOGIC CIRCUITS

David L. Greer, Manlius, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,419
Int. Cl. H04q *9/00*
U.S. Cl. 340—166 R **12 Claims**

Disclosed are universal associative logic circuits for use in designing digital systems. The logic circuits comprise an array of storage cells interconnected to form a final circuit configuration which can be electrically altered to make possible the generation of a plurality of logic functions which may be specified after fabrication of the circuit. Programming means

are provided to configure the circuit so that it can generate signals representative of a required Boolean function or functions, each function having a single or a multiplicity of output signals and including both combinational and sequential logic forms.



3,818,453

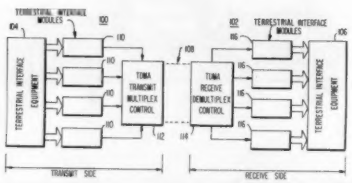
TDMA SATELLITE COMMUNICATIONS SYSTEM

William G. Schmidt, Rockville; Ova G. Gabbard, Germantown, both of Md.; John M. Husted, Vienna, Va., and Wilfrid G. Maillet, Oxon Hill, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 11, 1971, Ser. No. 170,797

Int. Cl. H04j *3/16*

U.S. Cl. 340—172.5 **11 Claims**



In a satellite transponder communications system operating in a time division multiple access mode, each earth station transmits data in a burst format. All bursts within a single transponder frame are synchronized to a special reference burst which contains no data communications. A single earth station sends out the reference burst as well as its normal burst, and in the case of multi-transponders and multi-transponder frames, the single reference station sends out all of the reference bursts for the various transponder frames. Data to be transmitted may be received in many different forms and included within the same burst because of the modular arrangement of the earth stations. Individual terrestrial interface modules receive data in various forms, convert the data into bit form which is compatible with the TDMA system, store the converted bit stream and hold the block of data until a multiplexer requests the block of data for inclusion into the earth station's transmitted burst. The arrangement of blocks of data within a burst and the timing and duration of a burst is controlled by digital words stored in a memory. Complete reordering of burst times and the arrangement of blocks of data within a burst is accomplished by changing the words stored in the memory. A comparable system on the receive side of the earth station extracts blocks of data in selected bursts for conveyance to selected terrestrial interface modules.

3,818,454

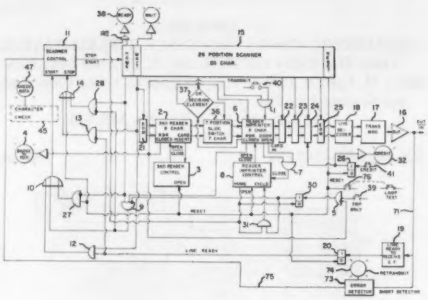
CARD READER-IMPRINTER REMOTE TERMINAL

Michael Joseph Yaccino, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 32,150, April 27, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,292

Int. Cl. H04j *3/00*; **G06f** *3/04*, *11/00*

U.S. Cl. 340—172.5 **8 Claims**



The disclosure relates to a remote terminal card reader-imprinter facility which is connectable to a central facility via telephone lines or the like. The remote terminal scans information set into the scanner including the information on a coded card upon command and transmits same to the central facility, the reader-imprinter providing a printing operation only upon receipt of predetermined information from the central facility. The scanner includes the features of checking all positions to be scanned prior to scanning to locate a faulty circuit such as a ground. The scanner further includes a circuit wherein at least one indicia switch must be moved from a position in which it was set during a prior scan before the scanner can be activated. Furthermore, an error detector is provided at the scanner output which counts the number of characters transmitted and provides a retransmit signal in the event the proper number of characters has not been transmitted to the output. The disclosure also includes a multiplexer for use with a plurality of remote terminals for transmitting information from the remote terminals to the central facility.

3,818,455

CONTROL COMPLEX FOR TSPS TELEPHONE SYSTEM

Edwin F. Brenski, Clarendon Hills; Jan Draayer, Wheaton; Nigel J. E. Reynolds, Palatine; Verner K. Rice, Wheaton; Donald L. Schulte, Elmhurst; William R. Wedmore, Glen Ellyn; John A. Wilber, Des Plaines; Rolfe E. Buhrke, La Grange Park, all of Ill., and John G. Van Bosse, Acton, Mass., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

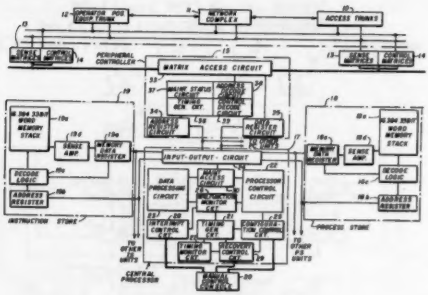
Filed Sept. 15, 1972, Ser. No. 289,718

Int. Cl. G05b *15/00*; **H04m** *3/00*

U.S. Cl. 340—172.5 **11 Claims**

A Central Processor and its associated Instruction Store and Process Store memories provide a data processing facility for performing control and maintenance functions for the switching and telephony subsystems in a TSPS telephone system. The interface between the Central Processor and the

switching and telephony subsystems is provided by a Peripheral Unit Complex which monitors and retrieves data



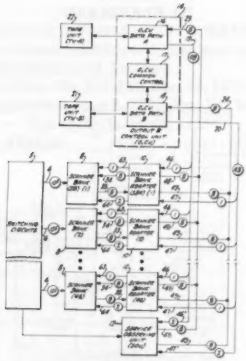
from the various sense points in the TSPS system and routes source information to the various control points in the TSPS system.

3,818,456

MESSAGE METERING SYSTEM

John C. McDonald, and Dalton W. Martin, both of Los Altos, Calif., assignors to Vidar Corporation, Mountain View, Calif.

Filed Oct. 6, 1972, Ser. No. 295,656
Int. Cl. H04m *15/00*
U.S. Cl. 340—172.5 **20 Claims**



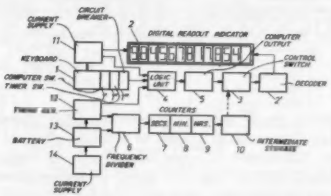
Disclosed is a local message metering system for metering information concerning each subscribers use of a telephone system. Each subscriber is directly connected to the measuring system with a multistate signal which indicates the line usage by a subscriber. The multistate signal for each subscriber is digitally encoded, scanned and interpreted by the metering system and pertinent information is recorded in memory. The metering system has memory automatically recording the calling subscriber's directory number, zone called, call duration and time of termination including one memory location for each subscriber. The message metering system additionally includes self-checking features and a service observing unit for detailed observation of the system use by selected subscribers.

3,818,457

DATA PROCESSING UNIT HAVING A DIGITAL READOUT INDICATOR

Klaus Schleifer, Ulm, Danube, Germany, assignor to Walter Buromaschinen GmbH, Gerstetten, Germany

Filed Oct. 11, 1972, Ser. No. 296,554
Claims priority, application Germany, Oct. 20, 1971, 2152160
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **3 Claims**



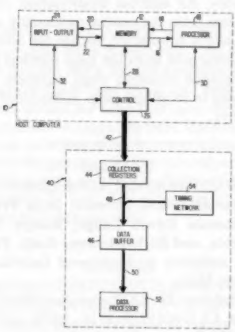
An electrically controlled data processing unit comprises a computer, a digital readout indicator and a timer unit. A computer switch key and a time indication switch kay arranged on the keyboard of the computer are connected to a control switch so that the digital readout can be connected selectively by this control switch to the logic unit of the computer or the frequency divider counter unit of the timer. A further switch on the keyboard connects the digital readout and the logic unit of the computer to a source of electrical energy. The frequency divider counter unit and the timing generator are connected permanently to a second source of electrical energy through a battery.

3,818,458

METHOD AND APPARATUS FOR MONITORING A GENERAL PURPOSE DIGITAL COMPUTER

Donald R. Deese, Camp Springs, Md., assignor to Comress, Rockville, Md.

Filed Nov. 8, 1972, Ser. No. 304,649
Int. Cl. G01r *15/12*
U.S. Cl. 340—172.5 **6 Claims**

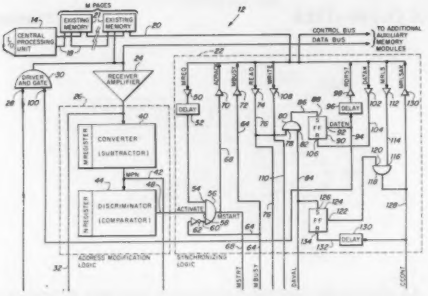


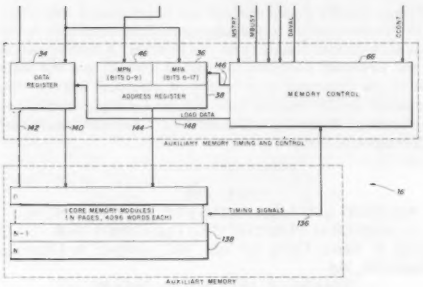
A method and apparatus for monitoring the utilization and performance of a general purpose digital computer without affecting operation of the computer itself, in which the monitor responds to a change in the operative state of the computer to capture the contents of certain status registers and locations in memory associated with the type of state change which has been detected and identifies the time at which such state change has occurred for analysis and time correlation by a data processor.

3,818,459
AUXILIARY MEMORY INTERFACE SYSTEM

Edward A. Vrablik, Stow, Mass., assignor to Dimensional Systems, Inc., Lexington, Mass.

Filed Dec. 19, 1972, Ser. No. 316,524
Int. Cl. G06f *13/06*
U.S. Cl. 340—172.5 **20 Claims**





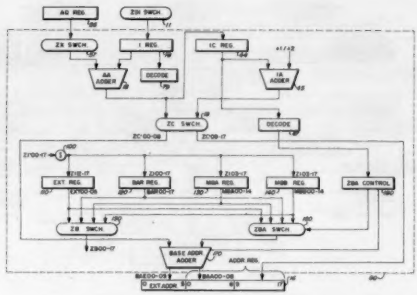
An interface apparatus for coupling an auxiliary memory of N pages to a central processing unit already containing M pages of memory. An address modification circuit transfers memory addresses from the central processing unit to the auxiliary memory and a subtractor, within the address modification circuit, subtracts M from the page number portions of the addresses to provide modified page numbers. The auxiliary memory responds to modified page numbers of greater than 0 and less than N+1.

3,818,460
EXTENDED MAIN MEMORY ADDRESSING APPARATUS

Albert LeMessurier Beard, Phoenix; John Francis Couleur, Scottsdale; Ronald Edwin Lange; Robert Frank Montee, both of Phoenix, and Richard Leroy Ruth, Paradise Valley, all of Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 29, 1972, Ser. No. 319,575
Int. Cl. G06f *9/20, 9/10;* **G05b** *19/28*
U.S. Cl. 340—172.5 **6 Claims**

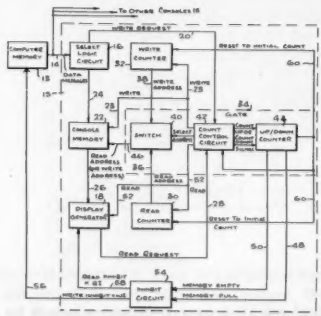
An extended addressing mechanism is disclosed for a digital computer system in which absolute addresses are generated over a span which exceeds the address span that can be generated by the address field of the computer instructions. For user slave programs, the regular base address register is augmented by an extended base address register. For operating system master mode programs, two master base address registers are provided, one for general purpose address augmentation and the other for special accumulator load/store instructions. In order to enable transformation of effective addresses to absolute addresses, special addition logic and control logic are also provided and combined so that effective addresses are selectively augmented or not, without increasing the time for preparation of the absolute address.



3,818,461
BUFFER MEMORY SYSTEM

Raymond W. Ward, Northridge, and Phillip W. Yows, Westlake Village, both of Calif., assignors to Litton Systems Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 242,525, April 10, 1972, Pat. No. 3,748,652. This application Mar. 5, 1973, Ser. No. 336,641
Int. Cl. G11c *9/00*
U.S. Cl. 340—172.5 **4 Claims**



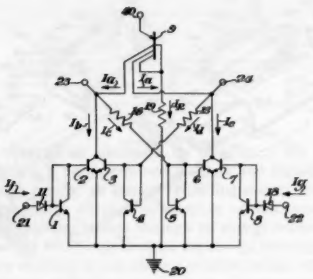
A memory system having a memory for storing data messages from a digital computer and display means for reading data messages from the memory at a rate independent of writing data messages. A counter means counts the number of data messages written into the memory and the number of data messages read from the memory to determine the locations in the memory for writing and reading, respectively. A queue of data messages is stored in the memory whenever the writing rate exceeds the reading rate. Data messages in such a queue are read in the order written.

3,818,462

NOISE IMMUNE I.C. MEMORY CELL

Robert A. Anselmo, Canastota, N.Y., and Walter S. Gontowski, Jr., North Grosvenordale, Conn., assignors to Sprague Electric Company, North Adams, Mass.

Filed June 4, 1973, Ser. No. 366,881
Int. Cl. G11c *11/40*; H03k *3/286*; B60r *21/10*
U.S. Cl. 340—173 FF 3 Claims



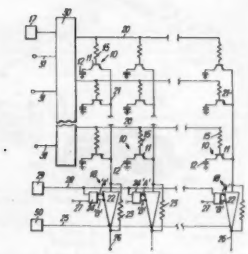
An integrated circuit bistable memory cell is described having a trigger threshold that is proportional to the power supply voltage. This threshold to power supply ratio may readily be adjusted over a broad range by adjustments in the design of the comprising integrated components. Further disclosure is made of an integrated seat belt interlock circuit for use in automobiles, employing the above mentioned memory cell having a high threshold and a high immunity to noise.

3,818,463

SEMICONDUCTOR INFORMATION STORAGE DEVICES

David Latham Grundy, Saddleworth, England, assignor to Ferranti Limited, Hollinwood, England

Continuation of Ser. No. 208,330, Dec. 15, 1971, abandoned. This application June 8, 1973, Ser. No. 368,106
Int. Cl. G11c *11/40*, *11/24*
U.S. Cl. 340—173 CA 16 Claims



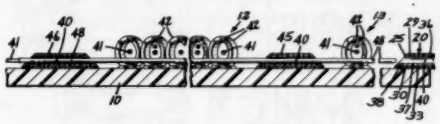
A cell of a monolithic semiconductor memory store comprises a bi-directional bipolar transistor with a capacitance connected to the collector, for example, a collector-diffusion-isolation transistor, there being associated with the cell, writing means which either charges the capacitance or not when the transistor is capable of conducting in the reverse direction, and reading means which produces an output indicative of whether or not the capacitance is charged.

3,818,464

WIRING GUIDES FOR COMPUTER CORE MEMORIES

Frederick J. Becker, Duluth, Minn., assignor to Duluth Scientific, Inc., Superior, Wis.

Filed July 26, 1971, Ser. No. 166,184
Int. Cl. G11c *11/02*
U.S. Cl. 340—174 MA 5 Claims



A generally rectangularly-shaped thin sheet of insulating material having a plurality of spaced apart tunnels extending therethrough in the plane thereof positioned adjacent quadrants of computer cores with the tunnels aligned with rows of computer cores in the quadrants. The tunnels guide the wires during initial wiring procedures and maintain the wires correctly positioned subsequent to the wiring procedures. Further, the sheets act as hinges for folding stacks of quadrants in a computer memory.

3,818,465

TRAVELING MAGNETIC DOMAIN WALL DEVICE

John R. Wiegand, Long Island, N.Y., assignor to Milton Velsinsky, Plainfield, N.J. and John R. Wiegand, Valley Stream, N.Y.

Continuation-in-part of Ser. No. 52,571, July 6, 1970, abandoned. This application July 7, 1972, Ser. No. 269,525
Int. Cl. G11c *11/04*
U.S. Cl. 340—174 ZB 20 Claims

A magnetic device which permits the relocation of one or more magnetic domain walls is disclosed. The device includes a first magnetic domain and a second magnetic domain having a coercivity substantially less than the first domain. The dimensions of the device are such that upon terminating exposure of both domains to a magnetic field, the first domain has a net magnetization in a first direction, a portion of the second domain has a net magnetization in a direction opposite from the first direction and the remainder of the second domain has a net magnetization in said first direction and is separated from said portion by a domain wall.

3,818,466

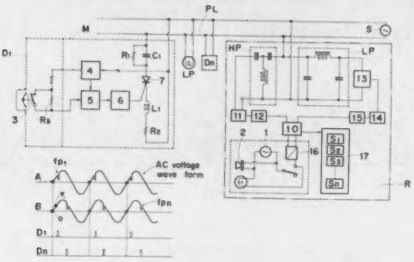
INFORMATION SYSTEM UTILIZING PULSE DIP SIGNALS SUPERIMPOSED ON A CARRIER SIGNAL

Yukio Honda, Tokyo, Japan, assignor to Akiro Tazaki, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,758
Claims priority, application Japan, Dec. 30, 1971, 46-185
Int. Cl. G08b *25/00*; H04q *9/00*
U.S. Cl. 340—216 13 Claims

An information system or an alarm system, which is capable of time-division transmission of an information signal or signals fed from detectors by using a power line or another existing line in operation across which A.C. voltage is applied. Each detector is connected to an oscillator and modulator cir-

cuit which is adapted to superpose an information signal to transmit, when it is fed from the detector, on the A.C. voltage wave form in the form of dip signal having an individual address. By allocation of a particular address of the dip signal to respective detector, a receiver can readily identify the detector which has sent an information signal, according to the address of the signal received.

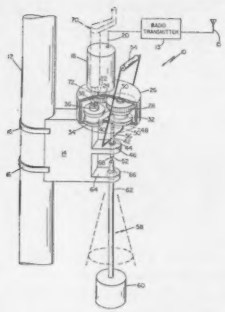


3,818,467

DAMAGE DETECTION

John George Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Mass.

Filed Feb. 1, 1973, Ser. No. 238,954
Int. Cl. G08b *23/00*
U.S. Cl. 340—224 **11 Claims**



Damage detection apparatus for use on a normally vertical post supporting a remote signalling device including a radio transmitter, comprising an electric generator having output terminals connected to the transmitter, a source of mechanical energy, and means for applying mechanical energy from the source to cause operation of the generator and the transmitter when the orientation of the post departs from the vertical by a predetermined amount.

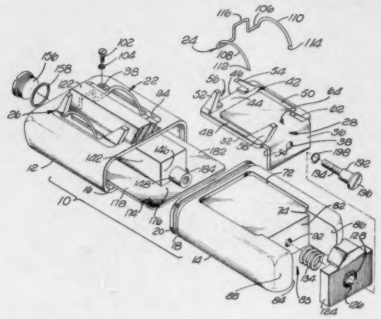
3,818,468

SELF-CONTAINED LIQUID DETECTOR

Dwight B. Toth, 6060 Clear Valley Rd., Hidden Hills, Calif. 91302; William G. Toth, 7148 Cold Water Canyon Ave., North Hollywood, Calif. 91605, and Alan B. Lees, 16568 Goldenrod Pl., Encino, Calif. 91316

Filed Sept. 15, 1972, Ser. No. 281,867
Int. Cl. G08b *21/00*
U.S. Cl. 340—224 **4 Claims**

A liquid detector for determining the presence of urine in an article of clothing such as an infant's diaper or undergarment. The detector includes a housing member containing a transmitter for emitting electrical signals when a predetermined amount of liquid is detected by the system. A pair of probes, which form electrodes, are secured to the housing. The probes are pivotally mounted on the housing, and a plunger is movably secured to the housing. Movement of the plunger in a first direction causes one end of the probes to be spaced apart from the housing and enables the article to be spaced between the housing and the probe ends. The probe ends are tapered to allow the probes to pierce the article surface.

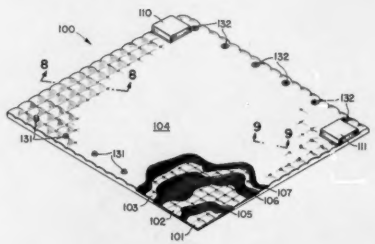


3,818,469

FIRE-WALL AND BURN-THROUGH PROTECTION SYSTEM

John E. Lindberg, 1211 Upper Happy Valley Rd., Lafayette, Calif. 94549

Continuation-in-part of Ser. No. 118,892, Feb. 25, 1971, abandoned, Continuation-in-part of Ser. No. 756,084, Aug. 12, 1968, abandoned, Continuation-in-part of Ser. No. 689,671, Dec. 11, 1967, abandoned. This application June 19, 1972, Ser. No. 264,080
Int. Cl. G08b *19/00*
U.S. Cl. 340—229 **20 Claims**

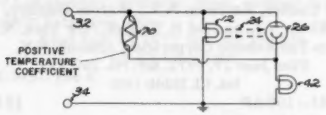


A hollow fire-wall hermetically sealed and having wall portions that are rigidly spaced apart to provide a sealed chamber, is sealed at a pressure significantly different from atmospheric. This acts to help stop the spread of fires. A change in the pressure toward atmospheric may be detected and used to give a warning or an automatic shut-down of a device beyond the firewall, such as an engine. A series of spot welds may insure the rigid spacing apart of the walls, or the fire-wall may be made of a continuously wound tube sealed to itself. "Redundant-type" operation may be provided. Arithmetic average temperature of the sealed chamber may be read. Peak temperature detection may be provided.

3,818,470
FLUID LEVEL DETECTOR

Hans G. Hirsbrunner, Attleboro, and Joseph W. Waseleski, Jr., Mansfield, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 93,212, Nov. 27, 1970, abandoned.
This application Jan. 10, 1973, Ser. No. 322,579
Int. Cl. G08b 21/00
U.S. Cl. 340—244 R 7 Claims

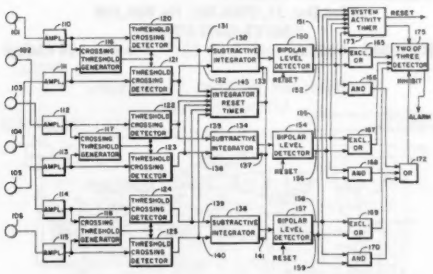


A detector is disclosed for indicating the presence or absence of a predetermined medium and includes an energy emitting means, an energy refracting means, and an energy sensing means which is in selective communication with the energy emitting means through an energy transmitting medium, which selectively couples the energy sensing means to the energy emitting means along a predetermined path only when the energy refracting means is in communication with the medium. The energy refracting means includes an energy transmitting body portion bounded in part by at least two non-parallel surface portions in the path of the emitted energy, one of the surface portions defining an external interface adapted to communicate with the medium to effect transmission of energy through the interface, when the interface is in communication with the medium, and to reflect energy from the interface along a portion of the predetermined path, through the energy transmitting medium, and to the energy sensing means, when the interface is not in communication with the medium so as to provide an indication of the presence or absence of the medium.

3,818,471
SEISMIC INTRUSION LINE SENSOR

Dennis L. Kurschner, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 14, 1972, Ser. No. 262,888
Int. Cl. G08b 13/02, 21/00
U.S. Cl. 340—261 11 Claims

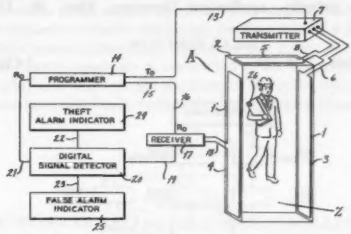


A seismic intrusion line sensor system comprised of three pairs of geophones positioned along a predetermined line. The output signals of the two geophones in each pair are processed to provide a signal indicative of the difference in the number of threshold crossings of the two geophone signals. These difference signals are then integrated over a period of time to provide a signal indicative of the seismic disturbance which is the cause of the unbalance in the signals generated by the various geophones. When two of the three pairs indicate signal unbalance, a local seismic disturbance is identified.

3,818,472
R.F. SYSTEM FOR DETECTING UNAUTHORIZED TRAVEL OF ARTICLES THROUGH A SELECTED ZONE

Kenneth G. Mauk, 1141 Sateen Dr., and Peter J. O'Neal, 56 Hawthorne Estates, both of St. Louis County, Mo. 63131

Filed May 26, 1972, Ser. No. 257,131
Int. Cl. G08b 13/24
U.S. Cl. 340—280 4 Claims

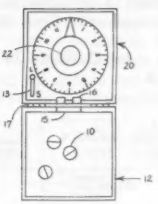


A theft detection system and method for detecting the passage of articles through a monitored zone including affixing a relay transponder to the articles, transmitting a preselected frequency signal to the zone for pickup by the transponder and retransmission to the ambient atmosphere, receiving and detecting the retransmitted signal, and providing simultaneous digital control to both the transmitting and the receiving means, whereby the latter may be alternately energized during monitoring operation to provide maximum sensitivity and minimum average power dissipation within the system. The relay transponder may advantageously be an LC parallel connected resonant tank circuit tuned to the preselected frequency of the transmitter and providing by ringing action the retransmitted signal detected in the receiver.

3,818,473
PERSONAL PILL REMINDER

Marjorie Remus Murray, and Daniel Allen Murray, both of 249-B Kapili St., Honolulu, Hawaii 96815

Filed Apr. 14, 1972, Ser. No. 247,178
Int. Cl. G04c 19/02
U.S. Cl. 340—309.1 R 11 Claims

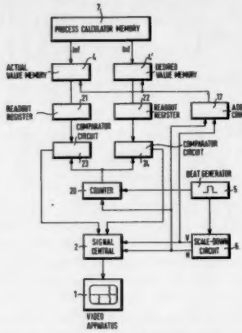


A pill container has a lower pill-holding portion and an upper cover portion. A spring-driven escapement controlled timer projects from an inner face of the cover portion. A battery in the cover portion supplies current to the buzzer when timer contacts are closed and when complementary contacts in the cover and container portions are juxtaposed. Opening the container stops the buzzer. When the container is closed without resetting the timer, the buzzer is activated, reminding the carrier to set the timer. When the timer is set and the cover is closed, the buzzer sounds after a preselected number of hours, reminding the carrier to open the box, take a pill, and reset the timer.

3,818,474
METHOD OF AND APPARATUS FOR COMPARING DESIRED AND ACTUAL VALUES PRESENTED IN DIGITAL FORM

Hans Kurner, Khe; Klaus Bindewald, Herrenalb; Manfred Schwarztrauber, and Lehari Eckmar, both of Khe, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 8, 1971, Ser. No. 121,841
Claims priority, application Germany, Mar. 10, 1970, 2011194
Int. Cl. G06f 3/14
U.S. Cl. 340—324 AD 7 Claims

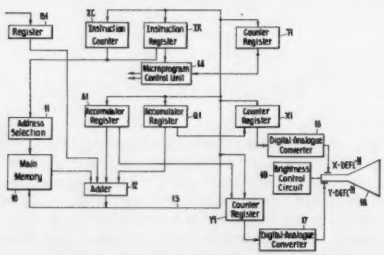


Digitally represented desired and actual value series are plotted in graph form on a television screen for the purpose of comparison. The corresponding desired and actual values are shown in the same line of the picture so that the desired value curve and the actual value curve extend parallel to one another. In order to be able to predict the future course of the actual value curve, the desired value curve runs across the entire screen, while the actual value curve extends only across a part thereof. The most recent actual values are shown in a midportion of the screen. In this manner, desired values are shown for which no corresponding actual values are yet available.

3,818,475
DIGITALLY OPERATING GRAPHIC DISPLAY SYSTEM

David William Hussey, Wateringbury, England, assignor to Elliott Brothers (London) Limited, London, England

Filed Sept. 11, 1972, Ser. No. 288,058
Claims priority, application Great Britain, Sept. 9, 1971, 42109/71
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 3 Claims



In a display system of the CRT type in which a DDA (digital differential analyser) technique is used, an associated computer is used for a substantial part of the operations required for the display system, with a consequent reduction in the display system circuitry per se.

Microprogram control is used for processing data from a main memory to obtain X and Y coordinates for display.

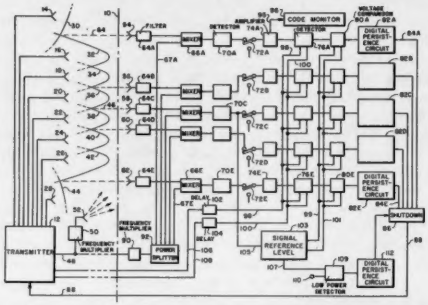
ERRATA

For Classes 340—310 thru 340—407 see: Patents Nos. 3,818,481 thru 3,818,487

3,818,476
NAVIGATION AID TRANSMITTER-MONITOR SYSTEM

J. Roland Coulter, Harrison, N.Y.; Warren Hundley, Upper Saddle River, N.J., and Sol N. Koblick, New York, N.Y., assignors to Tull Aviation Corporation, Armonk, N.Y.

Filed June 27, 1972, Ser. No. 266,533
Int. Cl. H04b 7/00
U.S. Cl. 343—100 AP 19 Claims

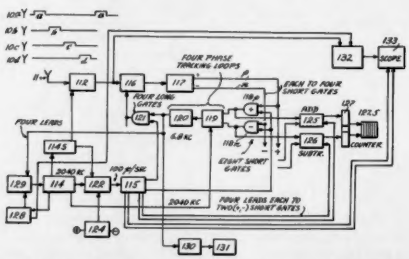


The monitor includes a plurality of separate monitor receiver antennas arranged at different displacement positions in space with respect to a course plane defined by the radio navigation aid transmitter being monitored. Separate monitor receiving channels are provided for each of said monitor antennas and respectively connected to said monitor receiver antennas for separately determining the presence of deviations of the received signals from the values within predetermined limits.

3,818,477
PULSE-OPERATED RECEIVER

Charles E. Odams, Londonderry, N.H., assignor to American Standard Inc., New York, N.Y.

Filed Dec. 31, 1969, Ser. No. 889,368
Int. Cl. G01s 1/30
U.S. Cl. 343—105 LS 34 Claims



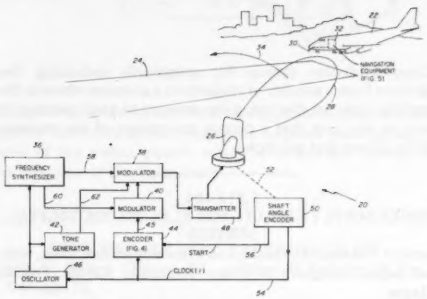
Disclosed is a receiver for a navigation system of the Omega type which operates with pulse-modulated signals. The phase of received and local signals is compared by quantized pulses; phase equalization, commutating gate control, phase tracking, and synchronization of gate patterns with time-sequence input signals are obtained by pulse insertion into, or deletion from, signal loops which contain phase detecting, sequential signal

selecting, and readout control components. Phase coincidence is counted cumulatively and is electromechanically stored. Lane position is recorded by pulse insertion. Components are constructed and interrelated to reduce noise and improve selectivity to enhance the benefits obtained by pulsed operation control.

3,818,478
CODED NAVIGATION SYSTEM

Herbert L. Groginsky, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Aug. 14, 1972, Ser. No. 280,320
Int. Cl. G01s *1/66*
U.S. Cl. 343—106 R **9 Claims**

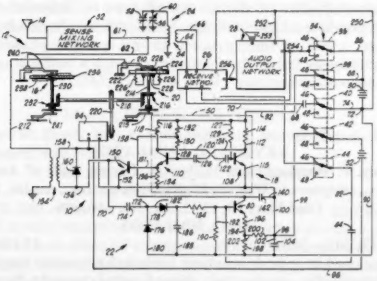


In a navigation system in which a beam of radiation is utilized for communicating information to a vehicle, such as an aircraft approaching a landing strip, there is provided a pseudo-noise generated binary code having sequentially generated bits ordered in a sequence of nonrepeating subsequences with each of these bits uniquely representing a value of a coordinate describing the position of the beam of radiation. For example, with an azimuthally scanned beam of radiation, each bit in the code represents an increment in the azimuth angle while the digits of one of the subsequences is sufficient to uniquely determine the azimuth angle. An encoder and a decoder, each similarly structured with a shift register and feedback logic, are disclosed.

3,818,479
DIRECTION FINDER

Robert P. Ledbetter, 5208 N. Billen, Oklahoma City, Okla. 13099

Filed Apr. 17, 1972, Ser. No. 244,452
Int. Cl. G01s *5/02*
U.S. Cl. 343—113 R **12 Claims**

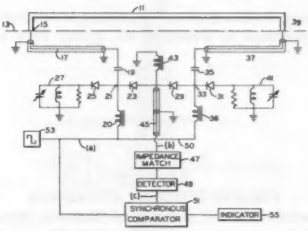


An improved direction finder for indicating the direction of a transmitted signal having a signal generating assembly receiving the transmitted signals from a non-directional antenna and a directional antenna, the resultant amplitude variant signal of the received transmitted signals having an actuating null position indicative of an aligned position of the directional antenna with respect to a particular, predetermined transmitted signal. The signal generating assembly produces a pulse output signal in a generating position thereof, responsive to the actuating null position of the resultant amplitude variant signal, and an indicator assembly receives the pulse output signal and provides an indicator output responsive thereto displaying the direction of a particular predetermined transmitted signal, in one form. An actuator signal control assembly is connected to the signal generating assembly and controls the duration of the pulse output signal for resultant amplitude variant signals of varying slopes.

3,818,480
METHOD AND APPARATUS FOR CONTROLLING THE DIRECTIVITY PATTERN OF AN ANTENNA

Raymond H. West, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed July 12, 1971, Ser. No. 161,811
Int. Cl. G01s *3/20*
U.S. Cl. 343—120 **12 Claims**



The present disclosure relates to a method and apparatus for varying the directional characteristics of a nonresonant antenna system by varying the impedance of the antenna terminating impedance and, more especially, to making the terminating impedance different from the characteristic impedance of the antenna. Means for interchanging the roles of the "feed" and "load" ends of the antenna in order to provide a directivity pattern and its mirror image directivity pattern and means for utilizing this pattern and its mirror image to precisely locate the direction to a transmitting source are also disclosed.

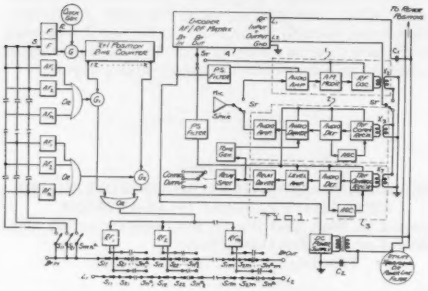
3,818,481
MULTIPLE ADDRESS DIRECT COUPLED COMMUNICATION AND CONTROL CURRENT CARRIER SYSTEM

Bertrand Dorfman, New York, N.Y., and John Lizzio, Morris Plains, N.J., assignors to Codata Corporation, Great Neck, N.Y.

Continuation-in-part of Ser. No. 6,154, Jan. 27, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,428
Int. Cl. H04m *11/04*
U.S. Cl. 340—310 R **8 Claims**

A multi-address two-way communication system with a control channel. A master position is inter-connected with a plurality of remote positions only over the AC power lines ser-

viced by the same AC power distribution network. The master position contains a source of RF signals, an RF signal modulator and circuitry for energizing the RF signal source and the RF signal modulator to provide a very large number of unique signal combinations. Each remote position contains a decoder circuit which identifies and responds to a signal combination unique to it. A multiplicity of AC power lines in an AC power distribution network are coupled together by frequency selective coupling devices to permit signalling and communication between positions in separated AC power lines in a large building.



3,818,482

CHARACTER DISPLAY SYSTEM

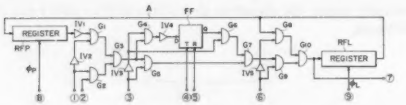
Tomio Yoshida, Katano, and Keiichi Okamoto, Higashiosaka, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed July 24, 1972, Ser. No. 274,742

Claims priority, application Japan, July 27, 1971, 46-56618; Aug. 6, 1971, 46-59692; Aug. 31, 1971, 46-67232; Aug. 31, 1971, 46-67235; Sept. 7, 1971, 46-69421; Sept. 7, 1971, 46-69424; Oct. 15, 1971, 46-81994

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **9 Claims**



A character display system of multi-rows and multi-columns comprising a first and a second memory for achieving repeated reading in the character display process, and means for inserting or erasing a character or characters in the information transfer between the first and the second memory or in editing the information in the first memory. Said means includes a shift register which can be inserted and disconnected from the recirculation loop of the data. The character display system has a function of arbitrary deletion or insertion of a character or characters in the display image plane.

3,818,483

GRAPHIC DISPLAY SYSTEM

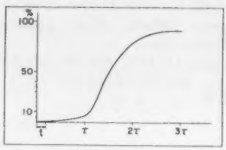
Satoshi Yamauchi, Tokyo, and Takashi Inoue, Asaka, both of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1972, Ser. No. 294,636

Claims priority, application Japan, Oct. 4, 1971, 46-77648

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 R **7 Claims**



Graphic display system for graphically indicating the responses from a number of students to a question wherein the sampling cycle for displaying the answers to each question is based on the time that a certain percentage of the students take to answer that question.

3,818,484

POWER SUPPLY CIRCUIT FOR ELECTRONIC DIGITAL SYSTEM

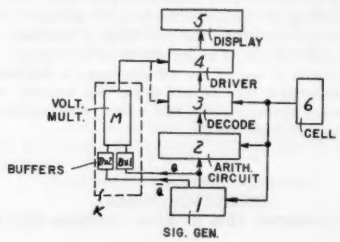
Tsutomu Nakamura, Akashi, and Mitsuo Morihisa, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1972, Ser. No. 319,235

Claims priority, application Japan, Dec. 29, 1971, 46-1047; July 2, 1972, 47-77781; Sept. 1, 1972, 47-88218

Int. Cl. G02f *1/18*; **H02m** *3/32*

U.S. Cl. 340—324 R **14 Claims**



The present disclosure is directed to a power supply circuit for an electric or electronic digital system which is operative in response to timing pulses. The timing pulses are fed to a voltage multiplier of the Cockcroft type or Schenkel type which provides a higher voltage. To effectively obtain a higher voltage, a pair of timing pulses having opposite phases are simultaneously fed to the multiplier through a buffer stage of complementary-symmetry MOS devices (CMOS).

3,818,485

KEYBOARD APPARATUS

Wesley V. Harrison, and Wilbur A. Foster, both of Austin, Tex., assignors to Western Digital Systems, Inc., Austin, Tex.

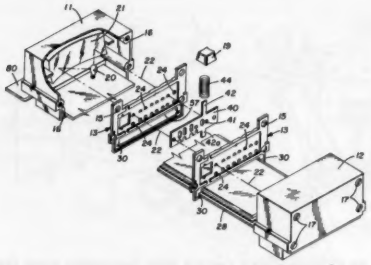
Filed Mar. 30, 1973, Ser. No. 346,666

Int. Cl. H04l *15/06*

U.S. Cl. 340—365 P **13 Claims**

Disclosed is optical switching keyboard apparatus employing identically constructed aligned matrix panels forming the housing apparatus as well as defining collimated light beams focused upon a photodector matrix which is disposed

in an area on a circuit board which extends transverse to and through slotted apertures in the aligned panels. Coded electrical signals are provided by the translation of coded



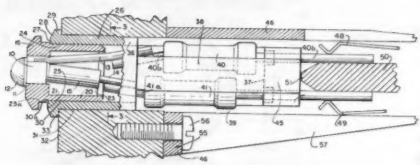
shutters into selected light interrupting relationship with the beams, the coded shutters effective to block selected apertures of the matrix panels, which apertures are tapered in the direction of the beam travel.

3,818,486

SWITCHBOARD LAMP CARTRIDGE PLUG

James R. Bailey, Chicago, Ill., assignor to Switchcraft, Inc., Chicago, Ill.

Filed May 7, 1973, Ser. No. 357,932
Int. Cl. G08b *5/36*
U.S. Cl. 340—381 R **1 Claim**



This invention provides a plug or cartridge assembly wherein a heat sensitive Light Emitting Diode (LED), and ballast resistor are part of an assembly, longitudinally spaced along the assembly so that when mounted in a panel aperture, the LED is at one (front) face of the panel and ballast beyond the other (or rear) face of the panel. The ballast is so mounted as to be accessible to atmosphere at the rear of the panel. The entire assembly is readily insertable into or removable from a panel.

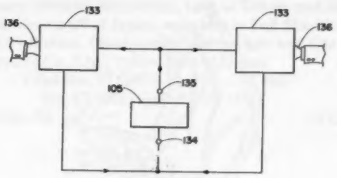
3,818,487

SOFT CONTROL MATERIALS

Warren M. Brody, and Avery R. Johnson, both of Armory Rd., Milford, N.H. 03055

Filed Aug. 24, 1972, Ser. No. 283,523
Int. Cl. G08b *1/00, 1/04*
U.S. Cl. 340—407 **25 Claims**

Soft control material usable as an interactive device with a user, or as a medium of communication between users on the tactile and least complex level. The material is self organizing; it uses distributed, self referent, and majority control of regions of the material, which allows greatly reduced amounts of information to be transmitted between units for communication therebetween. In its simplest form the change in total surface area of two adjacent bladders filled with Freon is de-



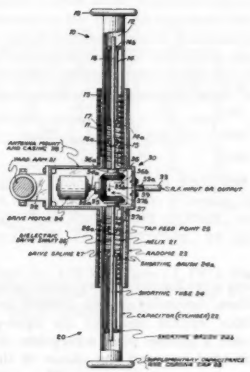
tected as the individual bladder temperatures of the Freon increase or decrease to the boiling or condensing points.

3,818,488

SHIPBOARD YARDARM HALF-WAVE ANTENNA

Charles P. Majkrzak, Nutley, and Michael S. Polgar, Oceanport, both of N.J., assignors to International Telephone and Telegraph Corporation, Nuttley, N.J.

Filed Jan. 18, 1973, Ser. No. 324,607
Int. Cl. H01q *9/16*
U.S. Cl. 343—709 **13 Claims**



Two frequency-adjustable antennas of the type having a helix and cylinder coaxially arranged end-to-end are themselves arranged inversely end-to-end in a ½-wave dipole antenna arrangement that is entirely ground plane independent. The end-to-end radiators are arranged about a common drive means which, while providing the main structural support of the antenna arrangement, provides simultaneous synchronous tuning of each leg of the antenna arrangement.

3,818,489

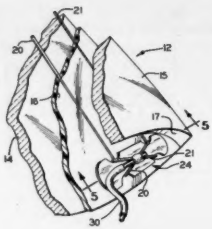
ANTENNA WINDSHIELD WITH ELECTRICAL CONNECTOR AND METHOD OF PRODUCING THE SAME

Robert J. Bobel, II, and Robert B. Kimura, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Oct. 20, 1972, Ser. No. 299,624
Int. Cl. H01q *1/32*
U.S. Cl. 343—713 **6 Claims**

An automobile windshield of laminated safety glass with an indentation in the lower edge of its outboard glass sheet, and provided with an antenna carried by its plastic interlayer that terminates in a pair of parallel, vertically disposed, wire ele-

ments wrapped around and soldered to an elongated metal connecting tab that is adhered to the interlayer within the area



of the indentation in the glass edge; and a method of producing such an antenna-windshield structure.

3,818,490

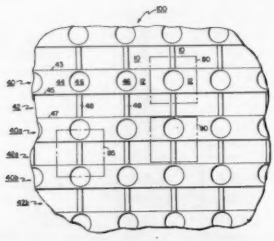
DUAL FREQUENCY ARRAY

Henry C. Leahy, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1972, Ser. No. 277,932

Int. Cl. H01q *21/00*

U.S. Cl. 343—727 **5 Claims**



An antenna array having two repetitive radiator systems in a single aperture, operating in two distinct frequency ranges. Each radiator system includes an open-ended, circular waveguide and a parallel plate waveguide. A monopole or a dipole is situated between the plates of the parallel plate waveguide and normal to them. The dimensions of the waveguides and the spacings between them are chosen to provide isolation between the frequency ranges.

3,818,491

APPARATUS FOR RECORDING THE SPEEDS OF A VEHICLE ON A TRAVELLING RECORD CARRIER

Helge Erling Skovgaard, 211 Asmundshoj, 3480 Fredensborg, Denmark

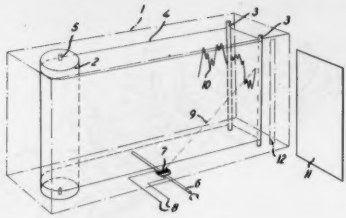
Filed Sept. 13, 1972, Ser. No. 288,694

Claims priority, application Sweden, Sept. 21, 1971, 11922/71

Int. Cl. G01d *9/12*

U.S. Cl. 346—21 **3 Claims**

A means for continuously recording the instantaneous speed of a vehicle during travelling periods thereof. The recording is effected by means of a light beam which impinges upon a layer of phosphorescent material provided on or in an endless tape advanced either at a constant speed or at a speed proportional to the vehicle speed. The means for creating or transmitting the light beam is connected to the tachometer drive of the vehicle in such a way that the light beam intersects the tape in a point, the location of which transversely of the tape depends upon the vehicle speed. A continuous or quasi-continuous speed curve is thus recorded in the layer of phosphorescent material, and this curve may later be photographed as long as the material is still emitting sufficient light from the excited particles thereof. Due to the decreasing intensity of the luminescent particles, the curve will automati-



cally be deleted after a certain time dependent upon the properties of the phosphorescent material employed. Means may be provided for effecting a positive deletion or erasion of the curve during the passage of the tape past such means and before any subsequent recording is effected on the tape.

3,818,492

RECORDING OF INFORMATION IN BIT FORM

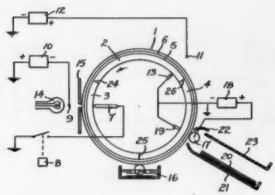
Josef Matkan, Malvern, Australia, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,770

Claims priority, application Australia, Nov. 13, 1970, 3188/70

Int. Cl. G01d *15/06*; G03g *15/02*

U.S. Cl. 346—74 P **3 Claims**



A dielectric recording member is prepared consisting of a backing member which is coated with a photoconductor layer overlain with a dielectric layer. The backing member consists of conducting portions separated by insulating portions so arranged that the conductivity of the backing is discontinuous across its width but continuous through its thickness. A linear array of writing styli is positioned to contact the conductive portions of the base on the side remote from the photoconductor and dielectric layer, which styli may be selectively grounded in response to an input signal to cause image wise charging of the dielectric surface when a uniform potential is applied to such dielectric surface of the recording member.

3,818,493

HIGH SPEED XEROGRAPHIC PRINTER

William Frederick Slack, Andover, N.J., assignor to Van Dyk Research Corporation, Whippany, N.J.

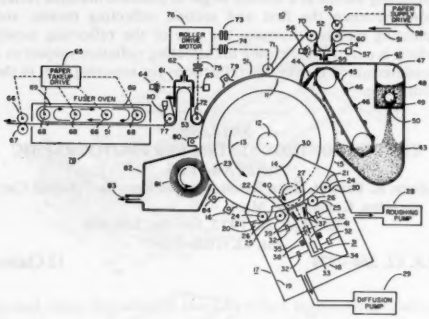
Filed May 22, 1972, Ser. No. 255,387

Int. Cl. G03b *27/10*; G03g *15/00*; H04n *5/80*

U.S. Cl. 346—74 EB **8 Claims**

A printing apparatus employing a rotating drum having a surface coating comprising a material which exhibits electron beam induced conductivity characteristics. The drum surface rotates through a vacuum chamber in which an electron beam scanning apparatus is situated. The electron beam surface is

uniformly charged by suitable means, and is selectively discharged by the scanning electron beam in accordance with a desired pattern to form a corresponding charge pattern on



the electron beam sensitive surface. This charge pattern is developed and transferred to a paper surface by xerographic techniques.

3,818,494

EXPOSURE CONTROL DEVICE

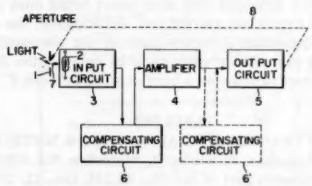
Kinzi Tanikoshi, and Tomoshi Takigawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 6, 1972, Ser. No. 269,327

Claims priority, application Japan, July 8, 1971, 46-50462; Aug. 9, 1971, 46-60131; Sept. 7, 1971, 46-69398; Oct. 12, 1971, 46-94085; Nov. 18, 1971, 46-108046

Int. Cl. G03b *7/10*

U.S. Cl. 354—42 **20 Claims**



This specification discloses an improved exposure control device for cameras. The device comprises an aperture mechanism for controlling the quantity of incident light, a photoelectric converter element for receiving a light beam passed through the aperture mechanism to convert it into an electrical signal, a detection circuit for detecting a signal from said element and comparing it with a signal representing the photographing conditions to produce a signal for adjusting the quantity of light passed through said aperture mechanism, a control circuit for receiving the signal from said detection circuit to control and drive said aperture mechanism so that the level of said signal becomes zero, and a phase compensation circuit connected with both said detection circuit and said control circuit. The phase compensation circuit improves the frequency characteristic of the output signal from said detection circuit, thereby preventing the occurrence of phenomena such as hunting and the like and enabling a proper exposure to be provided.

3,818,495

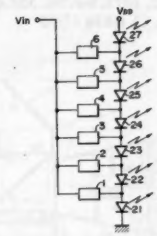
EXPOSURE VALUE INDICATING MEANS FOR PHOTOGRAPHIC CAMERA

Iwao Sagara; Hirohisa Shishikura, both of Tokyo, and Saburo Numata, Urawa, all of Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Ohmiya-shi, Saitama-ken and Oki Electric Industry Co., Ltd., Tokyo, both of, Japan

Filed Feb. 21, 1973, Ser. No. 334,465

Int. Cl. G01j *1/44;* **G03b** *17/18*

U.S. Cl. 354—53 **16 Claims**



A set of light emitting diodes are arranged in a line in the visual field of a viewfinder of a camera and one of the diodes is selectively energized to indicate an exposure value in terms of shutter speed required or the like. An exposure value measuring means including an exposure meter is connected with an input terminal of an exposure value indicating circuit which comprises a set of light emitting diodes connected with a set of switching circuits for selectively energizing one of the light emitting diodes.

3,818,496

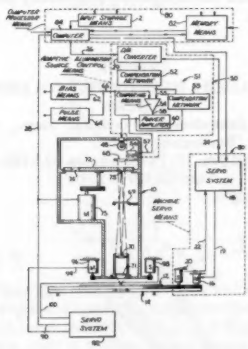
ILLUMINATION CONTROL SYSTEM

Barry T. Lee, Los Angeles; Gunther W. Wimmer, Saugus, and Gilbert P. Hyatt, Los Angeles, all of Calif., assignors to Micro Computer, Inc., Van Nuys, Calif., by said Lee and Wimmer

Division of Ser. No. 152,105, June 11, 1971, Pat. No. 3,738,242. This application Jan. 30, 1973, Ser. No. 327,918

Int. Cl. G03b *29/00, 27/76*

U.S. Cl. 354—75 **13 Claims**



A control system is provided for precisely controlling an illumination source which forms part of system. The control system enables the illumination source to be controlled in accordance with the characteristics of the recording medium, the relative motion between the recording medium and the illumination source, the image to be formed on the recording

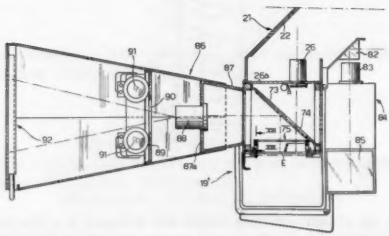
medium, the dynamics of the system causing the relative motion between the source and the recording medium, variations in the illumination source and over their life, and the illumination source dynamics.

3,818,497

AUTOMATIC APPARATUS FOR TAKING AND DEVELOPING PHOTOGRAPHS

Luigi Chiesa, Turin, Italy, assignor to Morenar S.A., Fribourg, Switzerland

Filed Jan. 22, 1973, Ser. No. 325,440
Int. Cl. G03b *17/50*
U.S. Cl. 354—89 **6 Claims**



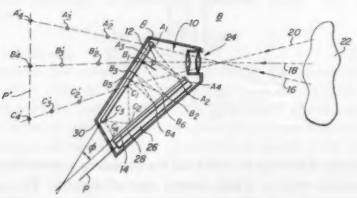
Apparatus for producing identity documents complete with a photograph of a person comprises a cabinet containing operative parts including a photographic assembly for taking pictures and an assembly for developing the reversible paper. The photographic assembly has two objectives mounted at right angles to each other on respective walls of a dark chamber. One of the objectives receives an image of the person via a 45° mirror and projects the image onto the paper in the chamber through a hole in a wall extending diagonally across the chamber. The other objective receives an image of an illuminated matrix bearing information to be included in the identity documents and projects this image onto the paper in the chamber via a mirror-forming part of the diagonal wall. A white border is produced around the pictures by a frame of transparent material with punctiform light sources arranged in a groove around the frame, inside surfaces of which are painted black to keep the light from the light sources away from the pictures. A viewfinder is provided to enable an operator to check that the person is correctly positioned for the photograph.

3,818,498

COMPACT CAMERA WITH HIGHLY FOLDED OPTICAL SYSTEM

Theodore F. Zehnpfennig, Wayland, Mass., assignor to Visidyne, Inc., Burlington, Mass.

Filed Jan. 15, 1973, Ser. No. 323,756
Int. Cl. G03b *17/17*
U.S. Cl. 354—150 **9 Claims**



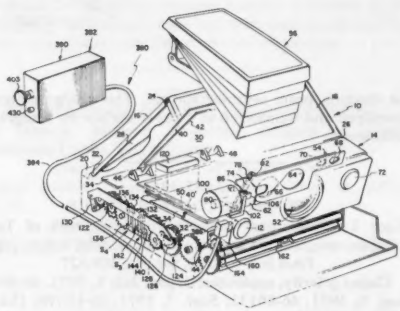
A compact camera having a highly folded optical system including, first reflecting means; second reflecting means disposed at a first angle to the first reflecting means, one of the first and second reflecting means being partially reflective, the film plane of the camera being proximate the one of the reflecting means which is partially reflective; means for directing radiation from an object to be photographed to one of the reflecting means at a second angle to produce multiple reflections between the first and second reflecting means; and selecting means proximate the one of the reflecting means which is partially reflecting for selecting radiation subject to a predetermined number of reflections for exposing film in the film plane.

3,818,499

REMOTE CONTROL SYSTEM FOR PHOTOGRAPHIC APPARATUS

Edison R. Brandt, Boca Raton, Fla., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,906
Int. Cl. G03b *9/64*
U.S. Cl. 354—238 **12 Claims**



Photographic apparatus and a remote control system therefor which functions to carry out a series of operational events in response to the brief manual depression of a remote start switch. The control system incorporates an electronic latch which is activated only after select initial ones of these operational events are carried out. Additionally, the control system incorporates a feature insuring the successful commencement of a photographic cycle by delaying the deactuation of the start switch after a brief depression thereof.

3,818,500

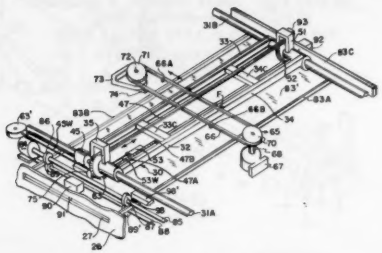
CARD TRANSDUCING APPARATUS & METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 83,239, Oct. 22, 1970, abandoned, which is a continuation of Ser. No. 807,877, March 17, 1969, abandoned, which is a continuation-in-part of Ser. No. 417,386, Dec. 10, 1964, Pat. No. 3,434,130, which is a continuation-in-part of Ser. No. 142,748, Aug 28, 1961, Pat. No. 3,646,258, which is a division of Ser. No. 515,417, June 14, 1955, Pat. No. 3,003,109. This application Aug. 2, 1972, Ser. No. 277,401
Int. Cl. G11b *5/80, 5/54, 21/12*
U.S. Cl. 360—2 **12 Claims**

An apparatus and method are provided for transducing signals with respect to record cards, first by recording signals representing document information on selected tracks of a record card and thereafter by selectively reproducing the signal information recorded on selected tracks of the cards. In a preferred form, the information record is in the form of full frame video picture signals capable of generating still monitorable images on the screen of a cathode ray tube. The signals are so generated and recording is selectively controlled and effected that a full frame vodeo picture signal occupies a single track of a plurality of such tracks extending parallel to each other along most of the length of the card.

A single transducing unit is provided capable of recording full frame video signals on selected tracks of a card and of coding the tracks. The unit contains a mount for magnetic heads which mount is movable in a plurality of directions to bring the heads into alignment with a selected card track and then to move the information signal transducing head parallel



to and along the selected track to effect transducing relative thereto.

An automatic control system is provided permitting recording on selected tracks of a card including automatic recording on the first unrecorded track appearing to a magnetic recording head as it moves or the first unrecorded track of a selected group of a plurality of track groups.

3,818,501

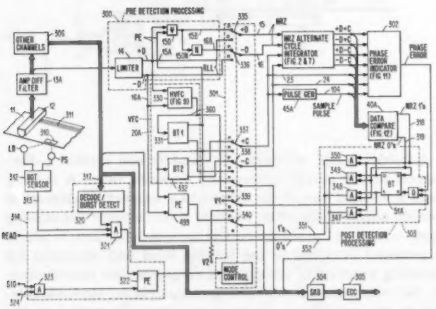
DETECTION OF DIGITAL DATA USING INTEGRATION TECHNIQUES

Benjamin C. Fiorino, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 197,906, Nov. 11, 1971, which is a continuation-in-part of Ser. No. 76,145, Sept. 28, 1970, abandoned. This application Apr. 23, 1973, Ser. No. 353,823

Int. Cl. G11b *5/00*

U.S. Cl. 360—40 **19 Claims**



Data represented in digital signals is detected by integration techniques; each integration occurs over the entire detection or sample period. Recovery of each integration circuit occurs in a subsequent sample period. A pair of integration circuits forming one integrator is provided for each state of the digital signal with the integrators being alternately actuated. To determine data contained in the signal, an amplitude comparison is made between the output of the analog-OR of each integrator for the several signal states. Conversion circuits associated with each integrator enable detection of data from diverse signal formats. Phase errors are detected and indicated using the data detection circuitry.

3,818,502

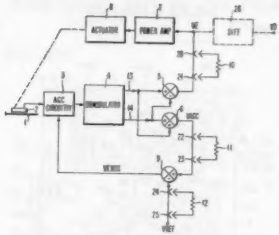
AUTOMATIC HEAD WIDTH CORRECTION

Jack Hui-Ning Chien, and Richard Karl Oswald, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,000

Int. Cl. G11b *5/56*

U.S. Cl. 360—77 **23 Claims**



The invention relates to means for compensating for variations in the effective head gap width of a servo transducer used in a track following servo system and more specifically used within the environment of a magnetic storage system. The compensation is obtained by modifying the gain characteristic of the position error generating circuitry within the track following servo system. The method of determining the value of the compensating means and for its physical and electrical insertion position within the position error generating circuitry for different partitioned magnetic disk storage systems is also disclosed. In its simplest form, the compensating means is a resistor placed in series with the reference voltage in the AGC circuitry of the position error generating circuitry.

3,818,503

ROTARY HEAD TYPE MAGNETIC RECORDING AND REPRODUCING APPARATUS

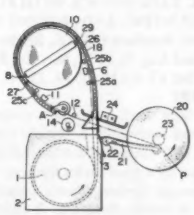
Hiroo Hosono, Hirakata, and Michinori Nagahiro, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1972, Ser. No. 310,965

Claims priority, application Japan, Dec. 1, 1971, 46-97370; July 31, 1972, 47-77222; Sept. 4, 1972, 47-88969

Int. Cl. G11b *5/52*

U.S. Cl. 360—85 **3 Claims**



A rotary head type magnetic recording and reproducing apparatus, in which a magnetic tape paid out from a supply reel is trailed around a guide drum having a plurality of rotary heads therein, over a predetermined central angle of said guide drum in such a manner that said magnetic tape may be positioned on a continuous line made up of a curved line having its center on the magnetic coating side of said magnetic tape, and straight lines, and is led to a winding reel in such a manner that the tape leading to the guide drum and the tape leaving said guide drum cross each other at a point remote from said guide drum, whereby travel of the tape is stabilized.

3,818,504
PORTABLE SOUND RECORDING AND REPRODUCING APPARATUS

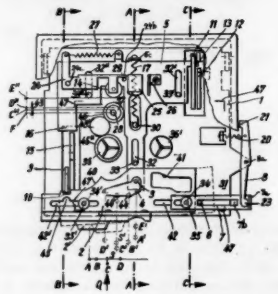
Erich Schroeder, Nuremberg, Germany, assignor to Grundig Elektro-Mechanische Versuchsanstalt Max Grundig, Furth/Bay, Germany

Filed Jan. 27, 1972, Ser. No. 221,231

Claims priority, application Germany, Jan. 27, 1971, 2103659

Int. Cl. G11b *5/00*

U.S. Cl. 360—96 **12 Claims**



A miniature tape recorder wherein the chassis supports a reciprocable carrier for a pressing roll and one or more magnetic heads. A selector knob is movable by one finger of the hand which grasps the chassis to effect movements of the roll between a first position of engagement with magnetic tape in an inserted cassette so that the tape is urged against a driven sound shaft and a second position at a short distance from the sound shaft. A cover which is pivoted to the chassis is movable by a spring-biased lever from a closed position to an open position in response to movement of the selector knob to an ejecting position whereby the cover moves the carrier with the roll and the head or heads to a retracted third position in which such parts cannot interfere with insertion or removal of cassettes. At the same time, the cover effects an at least partial expulsion of an inserted cassette from the chassis. When the cover is returned to its closed position, the roll and the head or heads automatically reassume their second positions.

3,818,505
MAGNETIC TAPE DEVICE WITH FLEXIBLE HEAD MOUNTING AND MOVING MEANS

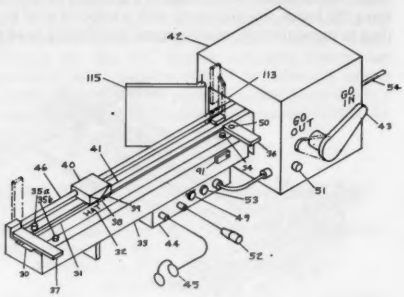
Elmer E. Garrett, Botsford Hill Rd., Roxbury, Conn. 06783

Filed Aug. 8, 1972, Ser. No. 278,748

Int. Cl. G11b *21/14, 23/16, 5/54*

U.S. Cl. 360—101 **12 Claims**

A magnetic tape device having a magnetic recording and reproducing head carried by a flexible tongue. The tongue is unwound from and wound on a drum while being held against the drum surface by a cord under tension. The drum is rotated by a motor through friction wheels which can be engaged to cause rotation in either direction. A support is provided for aligning message strips with the head and enhancing contact of the magnetic surface with the head. Controls are provided



for repeating the reproduction or erasure and recording of any portion of the message at will.

3,818,506
ARRANGEMENT FOR COMPENSATING FRICTION-INDUCED ELECTROSTATIC FORCES IN A READ-OUT DEVICE FOR DISC-SHAPED RECORD CARRIERS

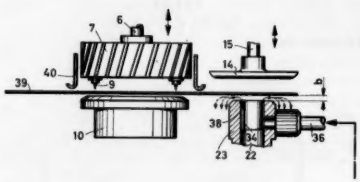
Heinz Kelch, Buchenberg, and Eduard Schuh, Villingen, both of Germany, assignors to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Filed July 7, 1972, Ser. No. 269,562

Claims priority, application Germany, July 10, 1971, 2134504

Int. Cl. G11b *15/64*

U.S. Cl. 360—130 **6 Claims**

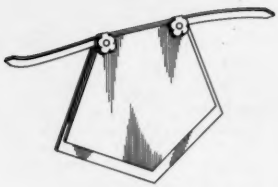


A holder holds, automatically centers and rotates a disc-shaped record carrier having two opposite sides. A sensing head is located one of the sides and a supporting element is located adjacent the other of these sides opposite the sensing head to support the record carrier against deflection. A nozzle is arranged proximal to the sensing head and operative for directing a stream of compressed air against the record carrier, the nozzle and the supporting element being movable relative to one another in direction substantially normal to the general plane of the record carrier.

DESIGNS

JUNE 18, 1974

231,810
APRON
Marjorie R. Basinais Daley, 2692 11th St., Cuyahoga Falls, Ohio 43219
Filed Apr. 30, 1973, Ser. No. 355,579
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—227

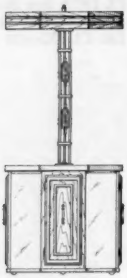


231,811
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed July 17, 1972, Ser. No. 272,687
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

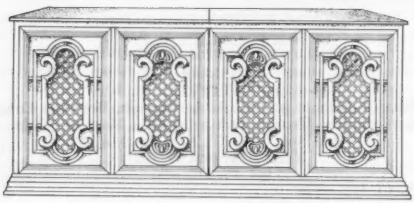
231,812
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed July 17, 1972, Ser. No. 272,688
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

231,813
SKI BOOT
Alden B. Hanson and Chris A. Hanson, Boulder, Colo., assignors to Hanson Industries Inc., Boulder, Colo.
Filed Nov. 29, 1972, Ser. No. 310,350
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—276

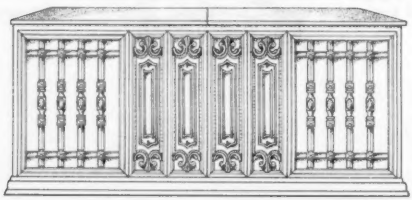
231,814
PORTABLE BAR
Daniel L. Weaver, 3710 N. Meridian St., Apt. 516, Indianapolis, Ind. 46208
Filed Oct. 25, 1972, Ser. No. 300,471
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—149



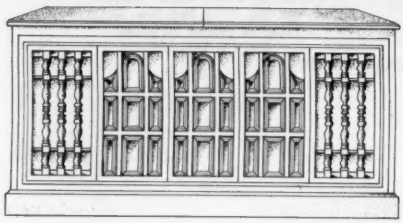
231,815
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed June 9, 1972, Ser. No. 261,573
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—151



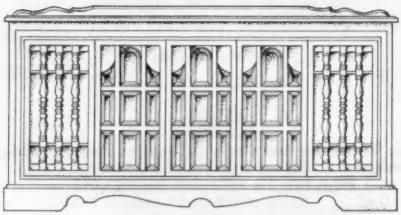
231,816
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed June 9, 1972, Ser. No. 263,742
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—151



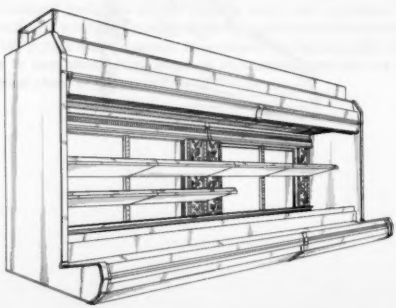
231,817
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed June 29, 1972, Ser. No. 267,372
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—151



231,818
CABINET
Robert Levine, Roslyn, N.Y., assignor to Capehart Corporation, New York, N.Y.
Filed June 9, 1972, Ser. No. 261,574
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154

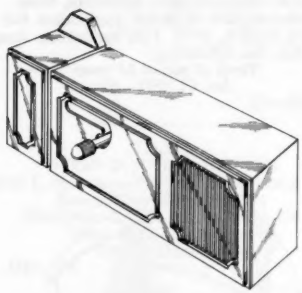


231,819
REFRIGERATED FOOD DISPLAY CASE
Arthur Perez, James E. Myers, and Fayez F. Ibrahim, Niles, Mich., assignors to Clark Equipment Company
Filed Aug. 21, 1972, Ser. No. 282,540
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—187



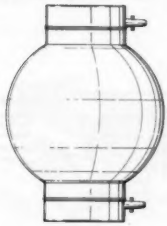
231,820
SPOON OR SIMILAR ARTICLE
Colin B. Richmond II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Sept. 15, 1972, Ser. No. 289,297
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

231,821
ENTRANCEWAY ALARM LATCH
Mitchell Maged, 123 Berkshire Road, Rockville Centre, N.Y. 11570
Filed Sept. 25, 1972, Ser. No. 291,971
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—131



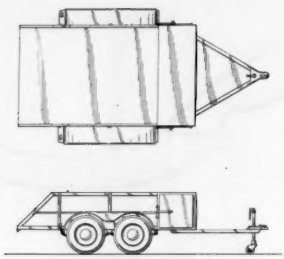
231,822
PLANE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Sheffield, England
Filed Mar. 6, 1972, Ser. No. 232,347
Claims priority, application Great Britain Sept. 7, 1971
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—101

231,823
CONTAINER FOR CHLORINE PELLETS OR THE LIKE
Clellmont L. Sharp, 6204 Eagle Lake Drive, Minneapolis, Minn. 55428
Filed June 21, 1972, Ser. No. 264,963
Term of patent 3½ years
Int. Cl. D9—*03*
U.S. Cl. D9—222

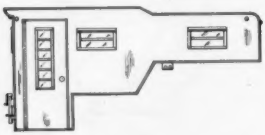


231,824
BOX
Carl Peder Pedersen, Riddarvagen 18, 181 42 Lidingo, Sweden
Filed Nov. 11, 1971, Ser. No. 198,087
Claims priority, application Sweden May 13, 1971
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—240

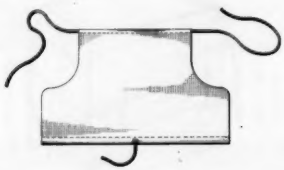
231,825
FIELD SERVICE TRAILER
Dan L. Daubert, 1225 Harding Drive, Edmond, Okla. 73034
Filed Apr. 27, 1973, Ser. No. 355,066
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—105



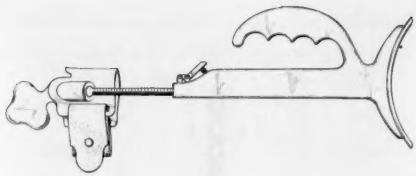
231,826
AUTOMOBILE-MOUNTED CAMPER
Arthur V. Woolley, 303 E. North St., Kansas, Ill. 61933
Filed July 18, 1972, Ser. No. 272,769
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—156



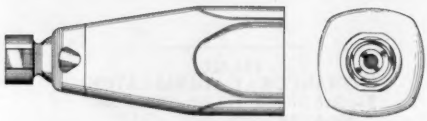
231,827
TAPE DECK COVER
Donald M. Spero, 1801 Clydesdale Place NW., Washington, D.C. 20009
Filed July 9, 1971, Ser. No. 161,418
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D21—6 R



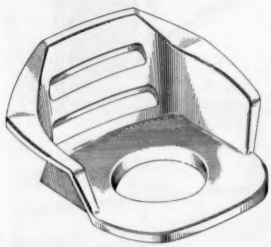
231,828
GUN AIMING DEVICE
Jack Y. Canon, 2194 Delmas, Opelousas, La. 70570
Filed Aug. 18, 1972, Ser. No. 281,951
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—7



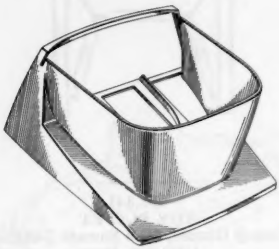
231,829
SHOWER HEAD
Gerald W. Frasier, Sherman Oaks, Calif., assignor to Rain Jet Corp., Burbank, Calif.
Filed Aug. 28, 1972, Ser. No. 284,088
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



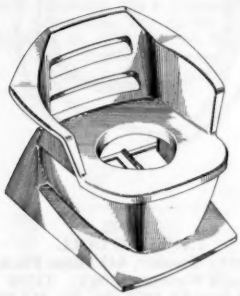
231,830
POTTY-CHAIR
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Squantum, Mass.
Continuation-in-part of design application Ser. No. 258,924, June 1, 1972. This application Aug. 17, 1973, Ser. No. 389,167
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53



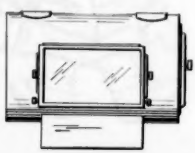
231,831
POTTY-CHAIR BASE
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Squantum, Mass.
Continuation-in-part of design application Ser. No. 258,925, June 1, 1972. This application Aug. 17, 1973, Ser. No. 389,168
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53



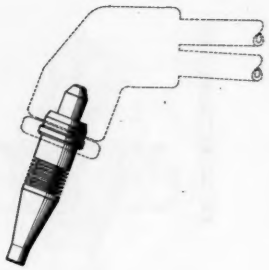
231,832
COMBINED POTTY-CHAIR AND BASE
Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Squantum, Mass.
Continuation-in-part of design application Ser. No. 258,926, June 1, 1972. This application Aug. 17, 1973, Ser. No. 389,350
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53



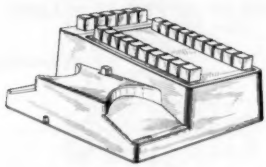
231,833
WOOD BURNING HEATER
Robert L. Stevenson, 9003 W. Evans Creek Road, Rouge River, Oreg. 97537
Filed May 4, 1972, Ser. No. 250,470
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—93



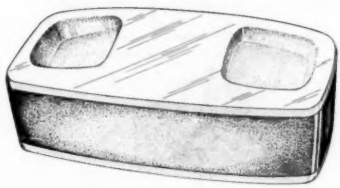
231,834
TORCH TIP
Albert Gulrich, Denton, Tex., assignor to Victor Equipment Company, Denton, Tex.
Filed Mar. 23, 1972, Ser. No. 237,594
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D26—1 P



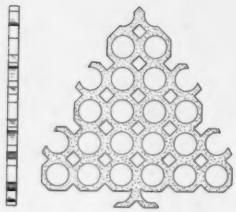
231,835
TELEPHONE INSTRUMENT BASE
Bronislaw Zapolski, Princeton, N.J., assignor to Sonaphone Systems Incorporated, New York, N.Y.
Filed June 22, 1972, Ser. No. 265,309
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



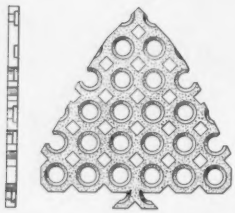
231,836
TELEPHONE STAND
Donald Michael Genaro, Haworth, N.J., John Niel McGarvey, Drexel Hill, Pa., and Gordon Elliott Sylvester, Jamaica, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 13, 1973, Ser. No. 351,101
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



231,837
CHRISTMAS DECORATION SUPPORT
Howard D. Kors, 236 S. Ridge St., Crown Point, Ind. 46307
Filed May 31, 1973, Ser. No. 365,565
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1 A



231,838
CHRISTMAS DECORATION SUPPORT
Howard D. Kors, 236 S. Ridge St., Crown Point, Ind. 46307
Filed May 29, 1973, Ser. No. 364,655
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1 A



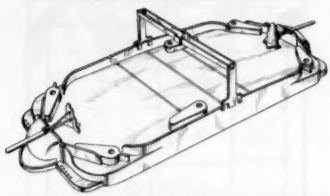
231,839
SAFETY LATCH FOR PET ANIMAL LEASHES
Claud W. Kissin, Fort Lee, N.Y., assignor to Hartz Mountain Pet Foods, Inc., Harrison, N.J.
Filed Sept. 20, 1972, Ser. No. 290,655
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—39

231,840
ANIMAL OILER
Maurice O. Gould, Box 53, Minden, Nebr. 68959, and Kenneth A. Wendt, 2021 Broad St., Fremont, Nebr. 68025
Filed July 18, 1972, Ser. No. 272,981
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

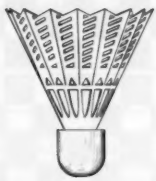
231,841
TOY PUPPET
Tomoji Ohnuki, 18–4 Suwada 2-chome, Ichikawa, Japan
Filed July 17, 1972, Ser. No. 272,188
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

231,842
FACELESS DOLL
Murray Goozner, 642 Diane Place, North Woodmere, N.Y. 11598
Filed June 23, 1972, Ser. No. 265,830
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

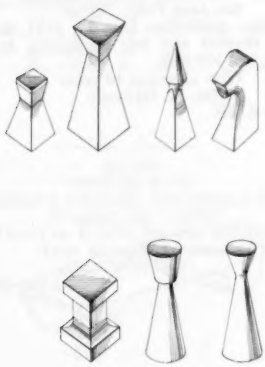
231,843
TABLE HOCKEY GAME BOARD
Bernard J. Tuschak and William R. Felege, Girard, Pa., and Harvey Lepselter, Bayside, N.Y., assignors to Louis Marx & Co., Inc., New York, N.Y.
Filed June 8, 1972, Ser. No. 261,140
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



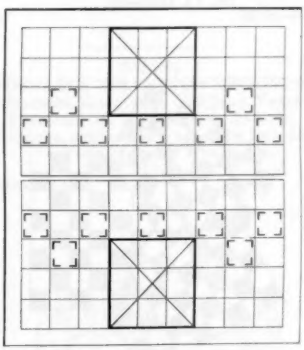
231,845
SHUTTLECOCK
Maurice Robinson and Philip Coxon, both of 4 York Road, Kings Heath, Birmingham B14 7R2, England
Filed Jan. 10, 1973, Ser. No. 322,455
Claims priority, application Great Britain July 10, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 SH



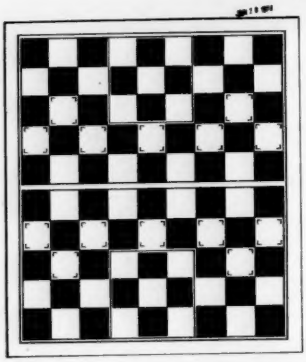
231,844
SET OF CHESS PIECES
Howard R. Singleton, 216 E. Mount Ida Ave., Alexandria, Va. 22301
Filed Sept. 28, 1972, Ser. No. 292,888
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH



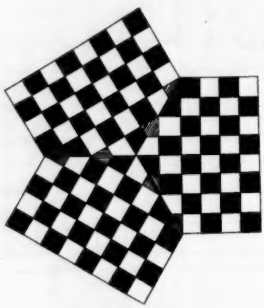
231,846
CHINESE CHESS BOARD
John Tchou, 127 Setauket Trail, Medford Lakes, N.J. 08055
Filed Mar. 21, 1973, Ser. No. 343,265
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



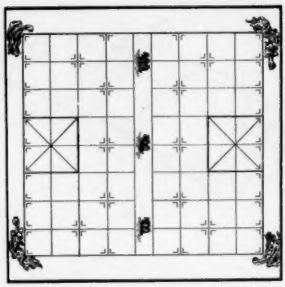
231,847
CHINESE CHESS BOARD
John Tchou, 127 Setauket Trail, Medford Lakes, N.J. 08055
Filed Mar. 21, 1973, Ser. No. 343,271
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



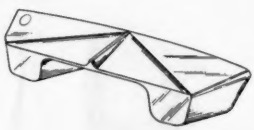
231,848
THREE PLAYER CHESS BOARD
Kenneth C. Mobert, 51 Harbor St., San Rafael, Calif. 94901
Filed Apr. 16, 1973, Ser. No. 351,552
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



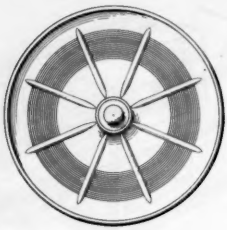
231,849
CHESS BOARD
Wah J. Sheck, Rockville, Md., assignor to Gemini Products, Inc., Wheaton, Md.
Filed June 13, 1973, Ser. No. 369,754
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



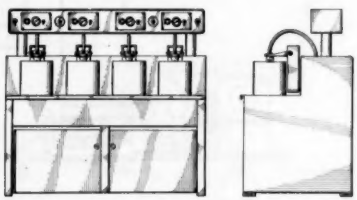
231,850
GOLF CLUB HEAD
Lloyd C. Winter, 1430 Cherrydale, San Jose, Calif. 95125
Original design application Dec. 17, 1971, Ser. No. 209,510. Divided and this application July 16, 1973, Ser. No. 379,852
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



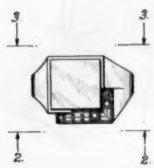
231,851
FLYING SAUCER TOY
Bernard Friedman, Allentown, Pa.
Filed May 15, 1972, Ser. No. 253,688
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH



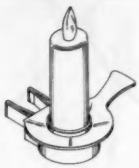
231,852
HOUSING FOR MULTIPLE LENS GRINDING AND POLISHING UNITS
Thomas A. Walsh, Fountain Valley, Calif., assignor to R. Howard Strasbaugh, Inc., Los Angeles, Calif.
Filed June 22, 1972, Ser. No. 265,208
Term of patent 14 years
Int. Cl. D15—*09*; D16—*99*
U.S. Cl. D37—1 A



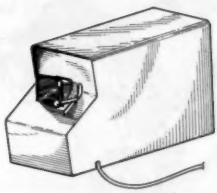
231,853
FINGER RING
Bernard I. Mechanic, 2425 Oakton St., Evanston, Ill. 60202
Filed Feb. 9, 1972, Ser. No. 225,022
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 C



231,854
GUIDE LIGHT
Robert L. Martin, Cranston, and Lawrence P. Mellyn, Glocester, R.I., assignors to General Electric Company
Filed June 23, 1972, Ser. No. 265,818
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 E



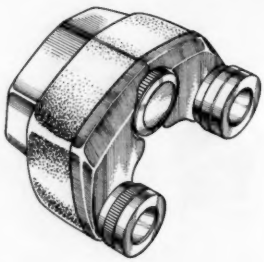
231,855
SCRAP METAL BANDING SHEAR
Jerome F. Moshofsky, 9019 SW. 15th St., Portland, Oreg. 97219
Filed July 24, 1972, Ser. No. 274,460
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 B



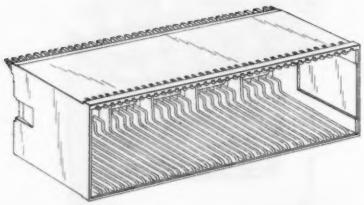
231,856
PORTABLE TELEVISION RECEIVER
Boris Rozman, Knezova 7, Ljubljana, Yugoslavia
Filed June 20, 1972, Ser. No. 264,495
Claims priority, application Yugoslavia Dec. 20, 1971
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

231,857
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed May 21, 1973, Ser. No. 362,031
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

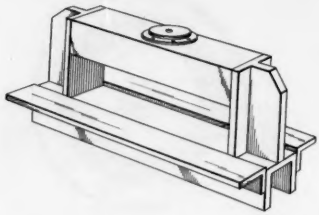
231,858
BINOCULAR
Claus O. Huckenbeck, Sherman Oaks, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Sept. 24, 1973, Ser. No. 400,219
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E



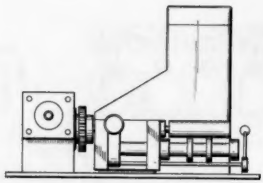
231,859
SLIDE TRAY
Leland W. Annett, Crystal, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 10, 1972, Ser. No. 242,912
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 S



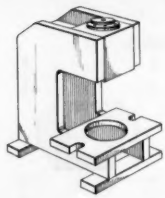
231,860
PUNCH PRESS
James T. Gramling, Shawnee, Kans., assignor to Gramling Tool & Die, Inc., Overland Park, Kans.
Filed Aug. 31, 1972, Ser. No. 285,325
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D63—1



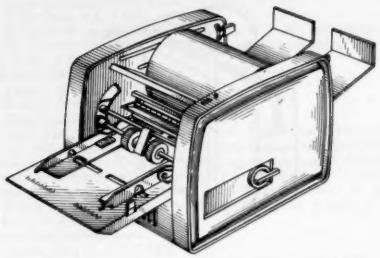
231,861
PUNCH PRESS
James T. Gramling, Shawnee, Kans., assignor to Gramling Tool & Die, Inc., Overland Park, Kans.
Filed Aug. 31, 1972, Ser. No. 285,326
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D63—1



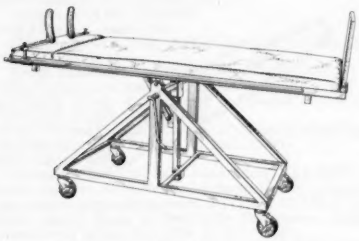
231,862
PUNCH PRESS
James T. Gramling, Shawnee, Kans., assignor to Gramling Tool & Die, Inc., Overland Park, Kans.
Filed Aug. 31, 1972, Ser. No. 285,327
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D63—1



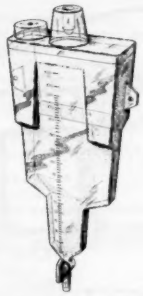
231,863
SPIRIT DUPLICATOR OR SIMILAR ARTICLE
David E. Anderson, Highland Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed May 19, 1972, Ser. No. 255,304
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B



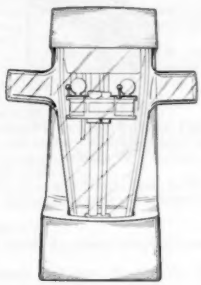
231,864
POSTURAL DRAINAGE TABLE
William E. Berne, Columbia, S.C., assignor to La Berne Manufacturing Company, Inc., Columbia, S.C.
Filed Aug. 10, 1972, Ser. No. 279,301
Term of patent 14 years
Int. Cl. D24—*01*; D6—*01*
U.S. Cl. D83—1 D

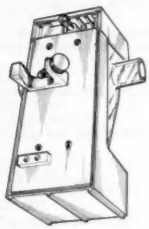


231,865
URINE METER
Joseph N. Genese, Clifton, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Apr. 19, 1973, Ser. No. 352,819
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 U

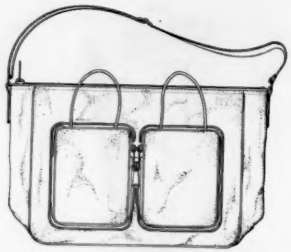


231,866
NEBULIZER UNIT OR SIMILAR ARTICLE
John M. Blank, Charles E. Cox, George Zimmerman, Wayne J. Zitkus, and James J. Nelson, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed May 7, 1973, Ser. No. 357,900
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 N





231,867
SHOULDER BAG
Matsusuke Ohyama, 1–25–24 OH-Imazato, Osaka, Japan
Filed Oct. 13, 1972, Ser. No. 297,297
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G



231,868
TOTE BAG
Matsusuke Ohyama, 1–25–24 OH-Imazato, Osaka, Japan
Filed Oct. 13, 1972, Ser. No. 297,298
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G

231,869
SATCHEL
Matsusuke Ohyama, 1–25–24 OH-Imazato, Osaka, Japan
Filed Oct. 13, 1972, Ser. No. 297,299
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G

231,870
KEY HOLDER
Martin Ferber, 8 Penwood Road, Livingston, N.J. 07039
Filed July 17, 1972, Ser. No. 272,382
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—8

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JUNE, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Toten Cellulosefabrik: *See*—
Hoye, John, 3,817,826.

Aaron, Stuart W.; and Lemmers, Johannes W. F. M., to Shell Oil Company. Method for contacting liquid and solid particles. 3,817,856, Cl. 208-213.000.

AB Bonnierforetagen: *See*—
Linde, Lars Hilding, 3,818,182.

AB ID-Kort: *See*—
Strindehag, Ove Magnus, 3,818,226.

Abaimov, Valery Grigorievich; Kochinev, Alexei Savelievich; Kiselev, Sergei Nikolaevich; Nikiforov, Vladimir Mifodievich; and Parsegov, Georgy Mesropovich. Device for rigging the position of and gripping a workpiece relative to the machine. 3,817,511, Cl. 69-227.000.

Abbott, Eugene A.; Isouith, Alan J.; and Walters, Patrick A., to Dow Corning Corporation. Method of inhibiting the growth of algae. 3,817,739, Cl. 71-67.000.

Abbott Laboratories: *See*—
Liston, Max D., 3,817,425.
Theriault, Robert John; and Eager, Earl Elmer, 3,817,836.
Von Esch, Anne Mary; and Geiszler, Adolph Oscar, 3,818,103.

Abe, Koojiro. Apparatus of winding a water-ski rope. 3,817,472, Cl. 242-107.00r.

Abe, Toshiro; and Kakite, Keizi, to Matsushita Electric Works, Ltd. Photosensitive solid oscillator. 3,818,370, Cl. 331-66.000.

Abell, Richard S.: *See*—
Ingalls, Douglas J.; and Abell, Richard S., 3,817,661.

Abitboul, Georges D., to Audio Magnetics Corporation. Vibration compaction process of magnetic tape. 3,817,785, Cl. 117-237.000.

A.C.B. Corporation: *See*—
Hitchcock, Arthur A., 3,818,160.

Acme United Corporation: *See*—
Cummings, Clinton M., 3,817,077.

Acryltech, Incorporated, mesne: *See*—
Anderson, Travis H.; and Anderson, Harvey H., 3,817,806.

Action Communication Systems, Inc.: *See*—
Epstein, Barry M., 3,818,449.

Action Films, Inc., mesne: *See*—
Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., 3,817,610.

Acton, Ricahrd G.: *See*—
Kreidl, Ekkehard L.; and Acton, Ricahrd G., 3,817,717.

Adachi, Tsukasa; and Kasuya, Kazuhiko, to Ricoh Co., Ltd. Device for preventing soiling of the trailing end portion of a transfer sheet. 3,817,615, Cl. 355-3.00r.

Adamek, Edward George, to DuPont of Canada Limited. Separation of dicarboxylic acids. 3,818,081, Cl. 260-537.00p.

Adams, Alton T.: *See*—
Karmann, Thomas R.; and Adams, Alton T., 3,816,892.

Adams, Jim Mills, to Hoffmann-La Roche Inc. Reflectometer for on-line analysis of granular powders. 3,817,628, Cl. 356-210.000.

Adams, Samuel Frank, to Heatransfer Corporation. Automobile air conditioning system. 3,817,054, Cl. 62-243.000.

Adler, Harold J., to Alcon Metal Products, Inc. Tube sockets for use with printed circuit boards. 3,818,278, Cl. 317-101.0cc.

Aer Corporation: *See*—
Cavallero, Louis Thomas; and Elnicki, Walter Joseph, 3,817,687.

Aerodyne Development Corporation: *See*—
Gordon, Mack; and Phillippi, John F., 3,816,977.

Aertech: *See*—
Mouw, Robert B., 3,818,385.

AGA Aktiebolag: *See*—
Westberg, Johan Erik Hayden; and Unger, Hans Peter Olof, 3,817,449.

Agency of Industrial Science & Technology: *See*—
Yabe, Akira; Tsuda, Minoru; and Tanaka, Hideaki, 3,817,757.

AGFA-Gavaert N.V.: *See*—
Laridon, Urbain Leopold; and Van Den Houte, Jozef Willy, 3,817,752.

Agfa-Gevaert: *See*—
Willems, Jozef Frans; and DeMunck, Joseph Louis, 3,817,753.

Agfa-Gevaert Aktiengesellschaft: *See*—
Maier, Albert; Pfeifer, Josef; and Ambraschka, Kasimir, 3,817,612.
Matejec, Reinhart; and Puschel, Walter, 3,817,751.
Neudecker, Karl; and Theer, Anton, 3,817,608.
Weinert, Volker, 3,817,617.

AGFA-Gevaert N.V.: *See*—
Claes, Frans Henri; Libeer, Marcel Jan; and Vanassche, Willy Joseph, 3,817,756.
Smolderen, Albert Emiel; and Cappuyns, Joseph Marie, 3,817,468.
Van Besauw, Jan Frans; De Volder, Noel Jozef; Van Engeland, Jozef Leonard; and Poot, Albert Lucien, 3,817,868.
Van Cappellen, Jan Baptist, 3,816,886.

Agricultural Utilities (Machinery) Limited: *See*—
Peasnall, Leonard Charles, 3,817,340.

Ahlbracht, Arthur H., to Minnesota Mining and Manufacturing Company. Fluorinated esters. 3,818,074, Cl. 260-486.00h.

Air Logistics Corporation: *See*—
Schirtzinger, Joseph F., 3,817,199.

Airco, Inc.: *See*—
Muska, Allen V., 3,817,045.

Aitken, Melvin N. Orifice fitting. 3,817,287, Cl. 138-94.000.

Akira Tazaki: *See*—
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Jungle, Nils Ake Curt; and Janred, Nils Rune, 3,816,861.

Aktiebolaget Tudor: *See*—
Eckerbom, Gunnar C.; and Rehnberg, Karl T., 3,817,788.
Odman, Tor Axel, 3,816,898.

Akzona Incorporated: *See*—
Rich, Charles M., 3,816,989.

Albers, Kenneth H.; Blood, Alden E.; and Snapp, Thomas C., Jr., to Eastman Kodak Company. Two step process for producing water-soluble alkyd resins. 3,817,932, Cl. 260-75.00n.

Albrecht, Gunther, to Daimler-Benz Aktiengesellschaft. Installation for brake of motor vehicles which are driven from a gas turbine. 3,817,343, Cl. 180-66.00r.

Alcan Research and Development Limited: *See*—
Bailey, William Dale; and Tomaka, Jan Zbigniew, 3,817,189.

Alcon Metal Products, Inc.: *See*—
Adler, Harold J., 3,818,278.

Alder, William R., to Kaiser Aluminum & Chemical Corporation. Single pass prereacted grain and method of making. 3,817,765, Cl. 106-59.000.

Aldrich, Paul H., to Hercules Incorporated. Method of preparing aqueous dispersions of fortified rosin. 3,817,768, Cl. 106-238.000.

Aleksoff, Carl C., to Du Pont de Nemours, E. I., and Company. Laser scanner using an intracavity device of a ferroelastic material to form an image. 3,817,597, Cl. 350-150.000.

Alexander, Allen Dean, to Industrial Nucleonics Corporation. Measuring gauge with support for holding measured sheet and discharging foreign matter. 3,818,327, Cl. 324-34.0tk.

Alexander, David L.; and Muenger, James R., to Texaco Inc. Two-stage ammonia absorption refrigeration system with at least three evaporation stages. 3,817,050, Cl. 62-101.000.

Alfa-Laval AB: *See*—
Andersson, Jarl Anders, 3,817,324.

Algeo, John W., to Santa Ynez Research Farm. Equipment for converting the physical and complex molecular bond structures of natural feedstuffs for ruminant animals to different and less complex. 3,817,786, Cl. 127-1.000.

Allais, Andre; Lilas, Les; and Meier, Jean, to Roussel Uclaf. Novel quinolines in the treatment of pain and inflammation. 3,818,090, Cl. 424-258.000.

Allen, Joseph C.: *See*—
Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., 3,817,330.

Allen, Michael George; and Tiers, George Van Dyke, to Minnesota Mining & Manufacturing Company. Organic carbonate salts as isocyanate trimerization catalysts. 3,817,939, Cl. 260-77.5nc.

Allen, Paul E., to Bendix Corporation, The. Lock and traverse fine feed machinism and bearing arrangement for measuring machine carriage. 3,817,111, Cl. 74-156.000.

Allen, William Merrill, to Chemetron Corporation. Handling apparatus for elongated masses with end cropping cutters. 3,817,136, Cl. 83-417.000.

Allied Chemical Corporation: *See*—
Lee, Lester T. C.; Pearce, Eli M.; and Litt, Morton H., 3,817,943.

Alloway Manufacturing, Inc.: *See*—
Eisenhardt, Fred W., 3,817,642.

Alpha, Smith, to Silver Lining, Inc. Pulverizing apparatus. 3,817,460, Cl. 241-55.000.

Alps Electric Co., Ltd.: *See*—
Shirakawa, Takashi, 3,818,287.

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Altstadter Verpackungs-Vertriebs GmbH: *See*—
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Amberger Kaolinwerke GmbH, Firma: *See*—
Trawinski, Helmut Franz, 3,817,388.

Ambler, Theodore C. Anti-pollution compressor control system. 3,817,265, Cl. 137-115.000.

Ambler, Walter B., to Texas Instruments, Incorporated. Circuit breaker apparatus. 3,818,403, Cl. 337-85.000.

Ambraschka, Kasimir: *See—*
Maier, Albert; Pfeifer, Josef; and Ambraschka, Kasimir, 3,817,612.

Amerace Esna Corporation: *See—*
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Heenan, Sidney A.; Ciccolella, Joseph A.; Majewski, Norbert; and Montalbano, Anthony J., 3,818,218.

American Air Filter Company, Inc.: *See—*
O'Dell, Leonard J., 3,816,978.

American Can Company: *See—*
Feinberg, Jacob H., 3,817,845.
Feinberg, Jacob H., 3,817,850.

American Chain & Cable Company Inc.: *See—*
Wentz, Edward A.; and Swam, John H., 3,817,368.

American Home Products Corporation: *See—*
Lapidus, Milton; and McGettigan, Marian M., 3,818,077.
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Yardley, John P.; Bright, Royal E.; Rees, Richard W.; and Smith, Herchel, 3,818,013.

American Olean Tile Company, Inc.: *See—*
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American Plasticraft Company: *See—*
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American Standard Inc., mesne: *See—*
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Ametek, Inc.: *See—*
Porter, John H.; Krebs, William A.; Stevens, Jackie D.; and Dobbin, Robert G., 3,818,257.

Amicon Corporation: *See—*
Zipilivan, Eliseo M.; Blatt, William F.; and Loeffler, Herbert H., 3,817,379.

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Amoco Production Company: *See—*
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AMP Incorporated: *See—*
Evans, William Robert; and Zimmerman, Richard Henry, 3,818,415.
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Lockard, Joseph Larue, 3,818,155.
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Anbe, Toshi: *See—*
Yamashita, Sadahiko; Anbe, Toshi; and Koike, Yjiro, 3,818,377.

Anderson, Clarence A. F., to Shaw-Walker Company, The. Lateral fire resistant file cabinet. 3,817,589, Cl. 312-214.000.

Anderson, Elmer C.; Dow, John, Jr.; Gutman, William B.; and Oetting, William A., to Lockheed Electronics Company, Inc. Remote control and display for a liquid dispensing system. 3,818,192, Cl. 235-92.0fl.

Anderson, Harvey H.: *See—*
Anderson, Travis H.; and Anderson, Harvey H., 3,817,806.

Anderson, Howard L., to BASF Wyandotte Corporation. Liquid level control device. 3,817,274, Cl. 137-392.000.

Anderson, Paul L.; and Manning, Robert E., to Sandoz-Wander, Inc. 2-Amino and substituted amino-4,6-diamino-5-pyrimidinesulfonamides. 3,817,998, Cl. 260-247.100.

Anderson, Ray C. Magazine loaded projector-player. 3,817,607, Cl. 352-74.000.

Anderson, Richard D.; Azelborn, Nicolas A.; and Wade, Wallace R., to Ford Motor Company. Critical flow venturi. 3,817,100, Cl. 73-213.000.

Anderson, Travis H.; and Anderson, Harvey H., to Acryltech, Incorporated, mesne. Method for prestressing reinforced thermoset resins. 3,817,806, Cl. 156-161.000.

Andersson, Jarl Anders, to Alfa-Laval AB. Heat exchanging plate. 3,817,324, Cl. 165-167.000.

Andersson, Ove. Fuse, more especially a weak-current fuse for motor vehicles or the like. 3,818,408, Cl. 337-206.000.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Installation for the venting of fuel tanks. 3,817,421, Cl. 220-85.0vr.

Andresen, William F., Jr., to FMC Corporation. Sheet position detector. 3,817,157, Cl. 93-54.00r.

Andrew Carlson & Sons, Inc.: *See—*
Carlson, Henry B.; and Pinezich, John R., 3,817,864.

Andrew Corporation: *See—*
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Andrews, Harry N.: *See—*
Frisch, Erling; and Andrews, Harry N., 3,817,829.

Andrianov, Kuzma Andrianovich; and Sipyagina, Marina Alexandrovna. Organo-element polysiloxanes having spirocyclic structure of molecules and method of producing the same. 3,817,917, Cl. 260-46.50r.

Andriola, Frank D.; and Suraci, Frank A., Jr., to Parodi Cigar Corporation. Short filler cigar machine. 3,817,257, Cl. 131-22.00a.

Anheuser-busch, Incorporated: *See—*
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Annen, Phillip A.: *See—*
Meyer, Jerome W.; and Annen, Phillip A., 3,818,429.

Anner, Georg; and Kalvoda, Jaroslav, to Ciba-Geigy Corporation. 3-Oxo-A-nor-B-homo-oestra-5(10),6-dienes. 3,818,075, Cl. 260-488.00b.

Anselmo, Robert A.; and Gontowski, Walter S., Jr., to Sprague Electric Company. Noise immune I.C. memory cell. 3,818,462, Cl. 340-173.0ff.

Anthony, Albert M; and Anthony, Richard J. Convergence assembly for color television picture tubes. 3,818,395, Cl. 335-210.000.

Anthony, Richard J.: *See—*
Anthony, Albert M; and Anthony, Richard J., 3,818,395.

Aoke, Masaharu; Odajima, Hiromichi; Segawa, Michi; Ueda, Ken; Fukase, Yasushi; Terajima, Yasuhiko; Yumoto, Hidekazu; and Mizobe, Takahiko, to Fuji Xerox Co., Ltd. Heat fusion-bonding apparatus for electrophotography. 3,818,185, Cl. 219-552.000.

Aoki, Ichizo; and Kitsukawa, Yoshitsugi, to Chizoda Chemical Engineering & Construction Co. Absorption-multicomponent cascade refrigeration for multi-level cooling of gas mixtures. 3,817,046, Cl. 62-40.000.

Aoki, Katsuhiko: *See—*
Mouri, Mineju; and Aoki, Katsuhiko, 3,818,401.

Appel, Wilhelm; and Kordak, Rolf, to Rexroth, G. L., G.m.b.H. Hydraulic lifting apparatus with constant pull regulation. 3,817,033, Cl. 60-444.000.

Aqua Ski Launch Corp.: *See—*
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Arbman Development AB: *See—*
Watterback, Paul Gunnar, 3,817,192.

Arco Nuclear, mesne: *See—*
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Areschka, Alex: *See—*
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Argabright, Perry A.; Phillips, Brian L.; and Echelberger, Larry M., to Marathon Oil Company. Reacting hydroxyl-terminated isocyanurate salts with diisocyanates. 3,817,937, Cl. 260-77.5nc.

Argoudelis, Alexander D.; Coats, John H.; and Sebek, Oldrich K., to Upjohn Company, The. 7-O-demethylcelesticetin derivatives. 3,817,979, Cl. 260-210.00r.

Argus Chemical Corporation: *See—*
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Arimura, Ichiro; Goto, Hiroshi; Matsushima, Hiroshi; and Nakao, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Power supply system. 3,818,366, Cl. 330-207.00p.

Arita, Tetsuo: *See—*
Kitahara, Makoto; Ishikawa, Shozo; Arita, Tetsuo; and Dohi, Masaaki, 3,817,749.

Armour, Donald F., to Package Machinery Company. Ejector for plastic injection blow molding machine. 3,817,678, Cl. 425-348.000.

Arneson, Howard M., to Arneson Products, Inc. Pool cleaning device. 3,817,382, Cl. 210-169.000.

Arneson Products, Inc.: *See—*
Arneson, Howard M., 3,817,382.

Arosio, Giovanni. Heat insulated container for pots. 3,818,180, Cl. 219-386.000.

Arvai, Tibor. Pushbutton switch assembly for keyboards including a bridging conductive, elastomeric diaphragm type contact. 3,818,153, Cl. 200-5.00a.

Asahi Glass Company Ltd.: *See—*
Kojo, Ichiro; Nakao, Eiichi; Katsumata, Masayuki; Kitahara, Masahiro; Tanaka, Tetsuji; Wada, Shinji; Tomioka, Taisaku; and Takahashi, Kunio, 3,817,736.

Asahi Kogaku Kigyo Kabushiki Kaisha: *See—*
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Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
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Asano, Tetsumasa; Takamiya, Hiroshi; and Morimoto, Yoshinobu, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for controlling vehicular speed and interspacing. 3,817,344, Cl. 180-98.000.

Asher, Elihu C.: *See—*
Fowler, Herbert H., 3,817,019.

Ashida, Kaneyoshi; and Frisch, Kurt C. Polyoxazolidone catalyst. 3,817,938, Cl. 260-77.50r.

Asselman, George Albert Apolonia; and Van der AA, Herman Henricus Maria, to U.S. Philips Corporation. Heating system. 3,817,322, Cl. 165-105.000.

Atchison, George J.; and Sundquist, Donald J., to Dow Chemical Company, The. Radiation cross-linking olefin polymers in combination with trivinyl isocyanurate. 3,817,851, Cl. 204-159.170.

Atkins, Bobby L.; and Bashaw, Robert N., to Dow Chemical Company, The. Radiation absorbing shield for personnel and materials and method of making same. 3,818,234, Cl. 250-515.000.

Atlantic Richfield Company: *See—*
Dransfield, Clifford D., 3,818,440.
Hearn, Daniel P., 3,818,322.

Atsuzaka, Hirotaka: *See—*
Miya, Masami; Yarita, Hidetoshi; and Atsuzaka, Hirotaka, 3,818,345.

Atwood, Richard W., to Filtering Materials Inc. Laser energized sterilization method and apparatus. 3,817,703, Cl. 21-2.000.

Audet, Norman F.; and Tirrell, John E., Jr., to United States of America, Navy. Materials testing system. 3,817,109, Cl. 73-423.0sd.

Audio Magnetics Corporation: *See—*

Abitboul, Georges D., 3,817,785.
Aufdermarsh, Carl Albert, Jr., to Du Pont de Nemours, E. I., and Company. Terpolymer of a polyisocyanate, a polyhydroxyphenol, and epoxy resin. 3,817,918, Cl. 260-47.0ep.
Augustyniak, Anthony A. Continuously cycling timer attachment for wall mounted toggle switch. 3,818,156, Cl. 200-33.00r.
Austin, Eric Paul, to Simon-Hartley Limited. Electrolytic flotation. 3,817,865, Cl. 210-192.000.
Autotrol Corporation: *See—*
Torpey, Wilbur N., 3,817,857.
Avco Corporation: *See—*
Hill, Charles E.; and Brobeck, William R., 3,818,435.
Avco Everett Research Laboratory, Inc.: *See—*
Locke, Edward V.; and Hells, Richard A., 3,817,606.
Avery Products Corporation: *See—*
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Ayres, Waldemar A., to Becton Dickinson and Company. Multiple sample needle assembly with one-way valve and blood flow indicator. 3,817,240, Cl. 128-2.00f.
Azar, David; and Lanneau, Keith P., to Roadways International Corporation. Roadway base and composition therefor. 3,817,643, Cl. 404-76.000.
Azelborn, Nicolas A.: *See—*
Anderson, Richard D.; Azelborn, Nicolas A.; and Wade, Wallace R., 3,817,100.
Babette, named Schlee, Barbara: *See—*
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Bach, Hans: *See—*
Heinroth, Karl-August; Neumann, Herbert; Dauscher, Rudi; Jurischka, Hans-Dieter; and Bach, Hans, 3,816,988.
Bachle, Wilfred H.; Richardson, John L.; and Segovia, Gilbert, to Philco-Ford Corporation. Reverse osmosis membrane end fitting. 3,817,387, Cl. 210-321.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Beer, Ludwig, 3,817,935.
Goelz, Horst; Stockburger, Dieter; Saeuberlich, Manfred; Mueller, Frank; Fuchs, Hartwig; and Von Erden Karl, 3,818,002.
Hagen, Helmut; and Becke, Friedrich, 3,818,036.
Kovacs, Jenoe; and Schefczif, Ernst, 3,817,942.
Mueller-Tamm, Heinz; Frielingsdorf, Hans; Nickl, Johann; and Kolk, Erich, 3,817,969.
Nienburg, Hans Juergen; Kniese, Wilhelm; Kummer, Rudolf: and Tavs, Peter, 3,818,057.
Schefczik, Ernst, 3,818,037.
Schoellkopf, Ulrich; Gerhart, Fritz; Hoppe, Dieter; and Jentsch, Reinhard, 3,818,065.
Stastny, Fritz; Gaeth, Rudolf; and Ikert, Boris, 3,818,086.
Walter, Manfred; and Weber, Heinz, 3,817,879.
Badische Aniline- & Soda-Fabrik Aktiengesellschaft: *See—*
Kovacs, Jenoe; and Eisfeld, Wolfgang, 3,817,927.
Baerlocher, Toni; and Ebert, Edith, to Ciba-Geigy Corporation. Imidazolidinetrionecarboxylic acid derivatives. 3,818,031, Cl. 260-309.500.
Baidsche Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Mueller-Tamm, Heinz; Frielingsdorf, Hans; Nickl, Johann; and Kolk, Erich, 3,817,970.
Baile, Clifton A.; Krabill, Lavern F.; and Simpson, C. Wayne, to Smithkline Corporation. Methods for improving the feed intake of meat producing animals. 3,818,101, Cl. 424-300.000.
Bailey, James R., to Switchcraft, Inc. Switchboard lamp cartridge plug. 3,818,486, Cl. 340-381.000.
Bailey, John R., to Senturion Sciences, Inc. Continuous bit positioning system. 3,817,345, Cl. 340-15.5mc.
Bailey, William Dale; and Tomaka, Jan Zbigniew, to Alcan Research and Development Limited. Rotary dump bulk carrying rail car. 3,817,189, Cl. 105-406.000.
Bair, Thomas I.; and Morgan, Paul W., to Du Pont de Nemours, E. I., and Company. Wholly aromatic carbocyclic polycarbonamide fiber having initial modulus in excess of 170 gpd and orientation angle of up to 40. 3,817,941, Cl. 260-78.00r.
Baird-Atomic, Inc.: *See—*
Piccolo, Adrian; and Turner, Arthur, 3,818,197.
Bakassian, Georges, to Rhone-Poulenc S.A. Unsaturated organi-tin mercaptides, their preparation and use. 3,818,062, Cl. 260-429.700.
Baker, Leroy D., to Diamond International Corporation. In-line package capping apparatus. 3,816,973, Cl. 53-287.000.
Bakker, Wate T.: *See—*
Dunworth, Bruce E.; and Bakker, Wate T., 3,817,770.
Bakul, Valentin Nikolaevich; Rabinovich, Esfir Salimanovna; and Yakovchuk, Jury Alexandrovich. Binder for cutting particles of abrisive tool. 3,817,976, Cl. 260-19.00u.
Baldwin, Arnold Victor; and Johnson, Walter, Jr., to GAF Corporation. Clamp assembly for pressure vessel. 3,817,564, Cl. 292-256.670.
Baldwin, John J.; and Novello, Frederick C., to Merck & Co. Inc. 2-Quinolyl-4(5)-trifluoromethylimidazoles. 3,818,014, Cl. 260-288.00r.
Balepin, Alexandr Alexeevich; Bobolev, Alexandr Vasilievich; Buslaev, Jury Alexandrovich; Chagin, Vladimir Ivanovich; Emanuel, Nikolai Markovich; and Sergeev, Andrei Ivanovich. Method for preparing propylene oxide. 3,818,051, Cl. 260-348.50v.
Ball, Eric, to Dunlap Holdings Limited. Hose pipes. 3,817,288, Cl. 138-125.000.
Ballantyne of Omaha, Inc.: *See—*
Brown, Ilo M., 3,817,611.
Balwe, Thomas; Bauer, Johann; Fendel, Kurt; Kurz, Dieter; and Sabel, Alex, to Wacker Chemie GmbH. Process for suspension polymerization of vinyl chloride with low polymer deposition. 3,817,959, Cl. 260-87.100.
Balwe, Thomas; Bauer, Johann; and Schleberger, Franz, to Wacker Chemie GmbH. Suspension polymerization of vinyl chloride. 3,817,963, Cl. 260-92.80w.
Bancroft Cap Company: *See—*
Weinsteing Brnard, 3,816,852.
Baran, John Stanislaus; and Langford, Donna, to Searle, G. D., & Co. 3-Hydroxy-3-substituted glutaric acid derivatives. 3,818,080, Cl. 260-535.00p.
Barbier, William J.; and Knaebel, Thomas C., to Sorlan Valve Company. Electromagnet coil assembly. 3,818,398, Cl. 335-278.000.
Bard, Charleton C., to Eastman Kodak Company. Photographic silver halide developing agents. 3,818,078, Cl. 260-509.000.
Bardet, Michel, to Buckeye Stephens Limited. Incubators for eggs. 3,817,214, Cl. 119-37.000.
Barenyi, Bela, to Daimler-Benz Aktiengesellschaft. Protective strip for motor vehicles. 3,817,016, Cl. 52-717.000.
Barlocher, Toni; and Ebert, Edith, to Ciba-Geigy. 2,4,5-Trioxoimidazolidine-3-carboxylic acid amides. 3,818,034, Cl. 260-309.500.
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Lenk, Erich, 3,817,672.
Barnett, Clive; and Dewing, John, to Imperial Chemical Industries Limited. Process for the preparation of adiponitrile by the ammoxidation of cyclohexane. 3,818,066, Cl. 260-465.300.
Barnscheidt, Wolfgang; Sollinger, Hans; and Krautzberger, Franz, to Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung. Coating apparatus for sheet material. 3,817,208, Cl. 118-119.000.
Barr, John E., to International Telephone and Telegraph Corporation. Low insertion force electrical connector. 3,818,420, Cl. 339-90.00r.
Barrera, Giorgio, to MECBAR S.p.A. Method of winding coils. 3,817,295, Cl. 140-92.100.
Barret, Jean-Pierre, to Institut Francais du Petrole des Carburants et Lubrifiants. Device for varying the speed of evolution of an amplifier. 3,818,364, Cl. 330-52.000.
Barrett, Frederick, to Electricity Council, The. Electrodeposition of iron foil. 3,817,843, Cl. 204-13.000.
Barrette, Oliver T., Jr.; and Carignan, Lucien W. Fish processing machine. 3,816,876, Cl. 17-57.000.
Barron, Laurence David; and Buckingham, Amyand David, to National Research Development Corporation. Testing of optically active substances by polarized radiation. 3,817,634, Cl. 356-114.000.
Barth, Bruce P., to Union Carbide Corporation. Adhesive compositions. 3,817,922, Cl. 260-53.00r.
Barthel, Ray L. Collapsible saw horse. 3,817,349, Cl. 182-155.000.
Bartley, John E., to Zeta International Engineering, Inc. Automatic welking apparatus. 3,817,440, Cl. 228-29.000.
Bartley, Lewis D. Injection mechanism. 3,817,165, Cl. 99-450.800.
Barton, Derek Harold; and Hesse, Robert Henry, to Research Institute for Medicine and Chemistry Inc. Process for 11,12-enolisation of 9α-halo-11-keto-steroids. 3,817,988, Cl. 260-239.55c.
BASF Wyandotte Corporation: *See—*
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Bashaw, Robert N.: *See—*
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Bateman, James H.: *See—*
Riedel, John Y., 3,817,487.
Batteux, Armand, to Societe Anonyme Francaise du Ferodo. Bladewheels. 3,817,656, Cl. 416-180.000.
Bauer, Johann: *See—*
Balwe, Thomas; Bauer, Johann; Fendel, Kurt; Kurz, Dieter; and Sabel, Alex, 3,817,959.
Balwe, Thomas; Bauer, Johann; and Schleberger, Franz, 3,817,963.
Baumann, Marucs; and Bosshard, Hans, to Ciba-Geigy Corporation. Process for the manufacture of dimethylmaleic anhydride. 3,818,050, Cl. 260-346.800.
Baumbach, Bertram W., to Reliable Electric Company. Line connector for a communications circuit. 3,818,271, Cl. 317-16.000.
Baumer, Wilhelm: *See—*
Stein, Alfred; Baumer, Wilhelm; and Schmitt, Dieter, 3,817,705.
Baumgartner, Erich Rudolf: *See—*
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Bayer Akiengesellschaft: *See—*
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Bayer Aktiengesellschaft: *See—*
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Hoppe, Peter; Drouven, Gustav; and Muller, Johann, 3,817,819.
Muller, Peter Rolf; and Peilstocker, Gunter, 3,817,907.
Niederdellmann, Georg; Bormann, Heinrich; Conrad, Horst; and Oertel, Gunter, 3,817,933.
Paulus, Wilfried; and Pauli, Otto, 3,817,702.
Regel, Erik; Buchel, Karl Heinz; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,818,029.

Schon, Nikolaus; Pampus, Gottfried; Witte, Josef; and Theisen, Dieter, 3,817,964.
Timmler, Helmut; Buchel,Karl Heinz; and Piempel, Manfred, 3,818,030.
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Bayer Aktiengesellschaft, mesne: *See—*
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Bayless, Frank K.; Brundage, Horace W.; Evans, Robert A.; and Hoover, John W. Vacuum cleaner suction tool for cleaning deep pile shag rugs. 3,816,872, Cl. 15-397.000.

Bayley, Henry S.; and Carlson, Walter E., to Canadian Patents and Development Limited. Fat absorption indicator for the digestive tract. 3,818,089, Cl. 424-9.000.

Bazan, Jose. Heavy-duty multi-purpose cleaner. 3,817,875, Cl. 252-527.000.

Beadle, William Edgar; Embree, Milton Luther; McAfee, Larry Gene; and Moyer, Stanley Floyd, to Bell Telephone Laboratories, Incorporated. Method for making high-gain transistors. 3,817,794, Cl. 148-1.500.

Beard, Albert LeMessurier; Couleur, John Francis; Lange, Ronald Edwin; Montee, Robert Frank; and Ruth, Richard Leroy, to Honeywell Information Systems, Inc. Extended main memory addressing apparatus. 3,818,460, Cl. 340-172.500.

Bearden, Edith Mae: *See—*
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Bearden, William G.: *See—*
Howard, George C.; and Bearden, William G., 3,816,894.

Bechtle, Robert M., to Kansas State University Research Foundation. Conversion of whey solids to an edible yeast cell mass. 3,818,109, Cl. 426-41.000.

Beck, Henry Nelson, to Dow Chemical Company, The. Nucleation of isotactic polystyrene. 3,817,966, Cl. 260-93.50a.

Becke, Friedrich: *See—*
Hagen, Helmut; and Becke, Friedrich, 3,818,036.

Becker, Clifford. Self-propelled dual-jack hoist. 3,817,401, Cl. 214-1.00d.

Becker, Frederick J., to Duluth Scientific, Inc. Wiring guides for computer core memories. 3,818,464, Cl. 340-174.0ma.

Becker, Jean-Jacques: *See—*
Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, 3,817,196.

Becton Dickinson and Company: *See—*
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Beecham Group Limited: *See—*
Heyes, James; and Ward, Neal, 3,818,033.

Beelen, Hilaire, to Sebia S. A. Holding. Front or back panel for motorbuses, and shaped bar used in such panel. 3,817,568, Cl. 296-28.00a.

Beer, Andrew E. Method of magnetically shrink-sitting members. 3,816,902, Cl. 29-446.000.

Beer, Ludwig, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of polybutylene terephthalates. 3,817,935, Cl. 260-75.00r.

Beifuss, Dieter: *See—*
Lobenhofer, Gerhard, deceased, 3,818,350.

Belanger, Patrice; and Luke, Michael O., to Merck Sharp & Dohme (I.A.) Corporation. Transparent NMR shift reagents. 3,818,061, Cl. 260-429.200.

Belart, Juan, to ITT Industries, Inc. Master cylinder for two-circuit brake systems. 3,817,037, Cl. 60-552.000.

Belko, William R. Electronic component. 3,818,263, Cl. 315-32.000.

Bell, Stanley C.: *See—*
Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Douglas, George H., 3,817,994.

Bell Telephone Laboratories, Incorporated: *See—*
Beadle, William Edgar; Embree, Milton Luther; McAfee, Larry Gene; and Moyer, Stanley Floyd, 3,817,794.
Bishop, John Daniel; Kakalec, Robert John; and Miller, Gerard Edward, 3,818,314.
Fisher, Reed Edward, 3,818,389.
Hamilton, Billy Harold; Meszar, John Robert; Ostapiak, Roman; Schroeder, Robert Edward; and Untamo, Peter Pentti, 3,818,307.

Bell-Northern Research Ltd.: *See—*
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Beloit Corporation: *See—*
Maiocco, Humbert Luciano, 3,817,675.

Benard, Claude, to Saint-Gobain Industries. Tunnel furnace, resistance type. 3,818,181, Cl. 219-388.000.

Bendiner, Bernard. Method of microbiological control of paper mill processes. 3,817,828, Cl. 162-161.000.

Bendix Corporation, The: *See—*
Allen, Paul E., 3,817,111.
Green, Norman; McGill, Robert L., Jr.; and Vergara, William C., 3,817,582.
Green, Norman; and Vergara, William C., 3,818,140.

Bendler, Hellmut; Gawlick, Heinz; and Marondel, Gunther, to Dynamit Nobel AG. Device for the inflation of safety cushions in vehicles. 3,817,263, Cl. 137-68.000.

Bennett, James H., to Singer Company, The. Ducted air conditioning system and combination duct therefor. 3,817,159, Cl. 98-33.00a.

Bennett, James Stewart: *See—*
Bennett, James Stewart; and Hatfield, Edwin Alexander (said Hatfield assor. to said), 3,817,664.

Bennett, James Stewart; and Hatfield, Edwin Alexander, said Hatfield assor. to said Bennett, James Stewart. Rotary fluid pump or motor with intermeshed spiral walls. 3,817,664, Cl. 418-55.000.

Bennett, Kenneth R.; and Crownover, Joseph W., to GTI Corporation, mesne. Solid state electronic element encapsulation with end contacting blister formation. 3,818,118, Cl. 174-252.000.

Benson, David A., to Cavcom, Inc. Magnetic ink character transition reader. 3,818,446, Cl. 340-146.30c.

Benz, Charles, to Scott Paper Company. Soft, Absorbent fibrous webs containing elastomeric bonding material and formed by creping and embossing. 3,817,827, Cl. 162-113.000.

Bergey, John, to Time Computer, Inc. Solid state watch with magnetic setting. 3,817,021, Cl. 58-50.00r.

Bergman, Hans Leopold. Method and a device for collecting substances floating in a liquid surface. 3,817,385, Cl. 210-242.000.

Bergmeister, Eduard; Ludwig, Peter; Wiest, Hubert; and Lieb, Erwin, to Wacker-Chemie GmbH. Process for the preparation of stable, aqueous copolymer dispersions of vinyl esters and ethylene. 3,817,896, Cl. 260-29.60r.

Bergstreser, Neil E.: *See—*
Dunn, Charlton, III; Tobin, Ronald D.; and Bergstreser, Neil E., 3,817,800.

Bergstrom, Darryl K.; and Clark, David C., to Lear Siegler, Inc. Circular connection bands for a suspended body. 3,817,508, Cl. 267-160.000.

Berkowitz, Sidney, to FMC Corporation. Production of sodium dichloroisocyanurate. 3,818,004, Cl. 260-248.00c.

Berks, William I.; and Meissinger, Hans F., to TRW Inc. Deployable solar array for a spin stabilized spacecraft. 3,817,481, Cl. 244-1.0ss.

Berley, Michael John, to Water Research Association, The. Dewatering sludges. 3,817,048, Cl. 62-64.000.

Berman, Alby M., to Energy Development Association, mesne. Electronic accelerator control for electric vehicle. 3,818,292, Cl. 318-139.000.

Bernard, Jean; Borel, Joseph; Glotin, Philippe; and Lacour, Jacques, to Commissariat a l'Energie Atomique. Complex integrated circuit comprising MOS transistors obtained by ion implantation. 3,816,905, Cl. 29-571.000.

Berrie, Alistair Howard; and Hughes, Nigel, to Imperial Chemical Industries Limited. Water-insoluble disazo dyestuff derived from a dihydroxypyridine as coupling. 3,817,975, Cl. 260-156.000.

Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., to Sun Oil Company. Method and apparatus for catalytically heating wellbores. 3,817,332, Cl. 166-302.000.

Berticevich, Edward N.: *See—*
Strasser, Jurgen H.; Wood, Philip; Berticevich, Edward N.; and Buchzik, Charles M., 3,817,259.

Bertozzi, Eugene R., to Thiokol Chemical Corporation. Polysulfide polymers with increased resistance to solvents. 3,817,947, Cl. 260-79.100.

Betensky, Ellis I.: *See—*
Watanabe, Rinzo; and Betensky, Ellis I., 3,817,600.

Bethlehem Steel Corporation: *See—*
Szendroi, Imre, 3,817,432.

Betoule, Daniel J. M.: *See—*
Boutmy, Patrick E.; Le Fort, Gilbert J.; and Betoule, Daniel J. M., 3,818,360.

Betz, Erwin C. Catalytic incineration apparatus. 3,817,716, Cl. 23-288.00f.

Bianchi, Nereo, to Necchi Societa per Azioni. Needle threading device assembled on sewing machines. 3,817,197, Cl. 112-225.000.

Bianchi, Nereo, to Necchi Societa per Azioni. Cam operated device for connecting balance wheel and main shaft in sewing machines. 3,817,360, Cl. 192-78.000.

Bibb, Roy, 20% to Lee, Raymond, Organization, Inc., The. Target scale buckets and bean bags. 3,817,526, Cl. 273-95.00r.

Bieganski, Halina: *See—*
Bieganski, Zdzislaw, 3,816,915.

Bieganski, Zdzislaw, 1/2 to Bieganski, Halina. Stripping tools. 3,816,915, Cl. 30-90.100.

Billeter, Henry R., to Sloan Valve Company. Dual operated angle cocks. 3,817,399, Cl. 213-1.00r.

Billman, Kenneth W.; Rowley, Paul D.; and Stallcop, James R., to United States of America, National Aeronautics and Space Administration. Measurement of plasma temperature and density using radiation absorption. 3,817,622, Cl. 356-73.000.

Bindewald, Klaus: *See—*
Kurner, Hans; Bindewald, Klaus; Schwarztrauber, Manfred; and Eckmar, Lehari, 3,818,474.

Binon, Fernand; and Areschka, Alex, to Labaz. 2-[(2-Alkylbenzo[b]furan-3-yl)methyl]-Δ^2 imidazoline. 3,818,035, Cl. 260-309.600.

Birkner, Helmut: *See—*
Diebel, Klaus; and Birkner, Helmut, 3,817,912.

Biro, Carl B. Pedometer toy. 3,818,194, Cl. 235-105.000.

Bischoff, Jack W. Can crusher. 3,817,169, Cl. 100-100.000.

Bischoff, John T.: *See—*
Chun, Myung K.; and Bischoff, John T., 3,818,373.

Bishop, John Daniel; Kakalec, Robert John; and Miller, Gerard Edward, to Bell Telephone Laboratories, Incorporated. Frequency controlled inverter. 3,818,314, Cl. 321-45.00r.

Bissonette, Kenton E. Free line down rigger release. 3,816,954, Cl. 43-43.120.

Black, Dewie W., to Burroughs Corporation. Amplitude comparison circuit. 3,818,339, Cl. 324-140.00r.

Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Method of inhibiting histamine activity with isothioureas. 3,818,097, Cl. 424-273.000.

Blackledge, Vernon O.: *See—*
Stearms, William P.; Blackledge, Vernon O.; and Rohrer, John S., 3,818,149.

Blackwood, Henson U. Chain link shackle. 3,817,028, Cl. 59-86.000.

Blahak, Johannes; Muller, Erwin; and Kleimann, Helmut, to Bayer Aktiengesellschaft, mesne. Aromatic diamines. 3,817,940, Cl. 260-77.5am.

Blake, Laurence Stephen, to Hockey-Mate International, Inc. Hockey puck projector. 3,817,235, Cl. 124-6.000.

Blakey, Roy, to Girling Limited. Hydraulic braking systems for vehicles. 3,817,583, Cl. 303-6.00r.

Blatt, William F.: *See—*
Zipilivan, Eliseo M.; Blatt, William F.; and Loeffler, Herbert H., 3,817,379.

Bloch, Jack, to Foster Grant Co., Inc. Sunglass and sunglass case display stand. 3,817,392, Cl. 211-13.000.

Blood, Alden E.: *See—*
Albers, Kenneth H.; Blood, Alden E.; and Snapp, Thomas C., Jr., 3,817,932.

Blosser, Robert W.; and Richard, Gordon L. Method for reducing embrittlement condition of metal. 3,817,849, Cl. 204-157.100.

Blount, R. E.: *See—*
Stacha, Joe, Jr., 3,818,438.

Blum, Rudolf, to Triumph Werke Nuernberg A.G. Keyboard controlled encoding mechanism. 3,817,366, Cl. 197-16.000.

Blundin, Albert R., to U.S. Pencil and Stationary Co. Cylindrical object dispenser having reciprocating trap chamber. 3,817,424, Cl. 221-175.000.

Bluthardt, Eberhard; Hoschele, Werner; and Spinner, Walter, to Hofliger & Karg. Apparatus for processing and storing rod-shaped dough. 3,817,369, Cl. 198-44.000.

Board, Richard G.; and Shapiro, Nelson H. Retractable safety belts. 3,817,473, Cl. 242-107.200.

Board, Richard G.; and Shapiro, Nelson H. Retractable safety belt. 3,817,474, Cl. 242-107.200.

Board, Richard G. Board-type game apparatus employing playing pieces with sets of indicia thereon. 3,817,524, Cl. 273-94.00r.

Bobel, Robert J., II; and Kimura, Robert B., to Libbey-Owens-Ford Company. Antenna windshield with electrical connector and method of producing the same. 3,818,489, Cl. 343-713.000.

Bobolev, Alexandr Vasilievich: *See—*
Balepin, Alexandr Alexeevich; Bobolev, Alexandr Vasilievich; Buslaev, Jury Alexandrovich; Chagin, Vladimir Ivanovich; Emanuel, Nikolai Markovich; and Sergeev, Andrei Ivanovich, 3,818,051.

Bobst, J., & Fils SA: *See—*
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Bocksch, Karl; and Hensel, Willi, to Mauser Kommandtgesellschaft. Rotary chair. 3,817,575, Cl. 297-347.000.

Boehringer Ingelheim GmbH: *See—*
Konz, Wilhelm; and Waldeck, Franz, 3,818,091.
Stahle, Helmut; Koppe, Herbert; Zeile, Karl; Hoefke, Wolfgang; and Samtleben, Hans-Wolfgang, 3,818,094.

Boehringer Mannheim GmbH: *See—*
Kampe, Wolfgang; Fauland, Erich; Stork, Harald; Juhran, Wolfgang; and Dietmann, Karl, 3,817;981.

Boeing Company, The: *See—*
Monroe, Gerald M.; and Von Bose, Robert J., 3,818,162.
Wilmont, Charles S., 3,816,935.

Boesch, Roger, to Rhone-Poulenc S.A. 3-(2,4-Dichloro-5-propargyloxy-phenyl) oxadiazolone derivatives useful as herbicides. 3,818,026, Cl. 260-307.00a.

Boger, Jerry Hench: *See—*
Reyner, Emerson Marshall, II; and Boger, Jerry Hench, 3,818,117.

Bohannon, James P.; and McAfee, Loyd O., said Bohannon assor. to said McAfee, Loyd O. Automotive suspension ball joint checking mechanism. 3,817,549, Cl. 280-96.20a.

Bohman, Nils-Erik: *See—*
Derman, Karl Gustav Einar; and Bohman, Nils-Erik, 3,817,507.

Bohn, Lutz: *See—*
Erk, Adil; and Bohn, Lutz, 3,818,152.

Bolduc, Lee R., to Medtronic, Inc. Regulatory apparatus. 3,817,237, Cl. 128-1.00r.

Bolt Associates, Inc.: *See—*
Chelminski, Stephen V., 3,817,335.

Bolt, Henry, to Inland Equipment Company. Hydraulically operated portable boring drill. 3,817,334, Cl. 173-23.000.

Bonetti, Giulio, to Klinger AG. Reflection-type level indicator. 3,817,205, Cl. 116-118.00r.

Bongiovanni, Carl G. Dog choke collar. 3,817,218, Cl. 119-106.000.

Bonne, Claude: *See—*
Pierdet, Andre; and Bonne, Claude, 3,818,056.

Bonnet, Dieter; and Rabenhorst, Helmut, to Hoffman-LaRoche Inc. Ultrasonic image recording system. 3,818,426, Cl. 340-5.0mp.

Bonniface, David William; and Catlow, David Brian, to Imperial Chemical Industries Limited. Separating adiponitrile from mixtures. 3,817,841, Cl. 203-29.000.

Borchert, Ernst, III, to Omark-Winslow Aerospace Tool Co. End mill grinder. 3,816,995, Cl. 51-96.000.

Borel, Joseph: *See—*
Bernard, Jean; Borel, Joseph; Glotin, Philippe; and Lacour, Jacques, 3,816,905.

Borg-Warner Corporation: *See—*
Guzy, Raymond L., 3,817,908.

Borin, Harlan F. Carafe with self-sealing spout. 3,817,430, Cl. 222-494.000.

Bormann, Heinrich: *See—*
Niederdellmann, Georg; Bormann, Heinrich; Conrad, Horst; and Oertel, Gunter, 3,817,933.

Bosch, Robert, G.m.b.H.: *See—*
Lietar, Christian, 3,817,626.
Paule, Kurt; and Schadlich, Fritz, 3,818,299.
Schmidt, Joachim; Merkl, Ernst; and Zillgitt, Ulrich, 3,818,215.
Stumpp, Gerhard, 3,817,229.
von Cube, Hans-Ludwig; and Wagner, Edmund, 3,817,321.

Bosch, Robert, Hausgeraete GmbH: *See—*
Mayer, Rolf, 3,817,170.

Boshers, William A., to United States of America, National Aeronautics and Space Administration. Battery testing device. 3,818,325, Cl. 324-29.500.

Bosshard, Hans: *See—*
Baumann, Marucs; and Bosshard, Hans, 3,818,050.

Bouchaudon, Jean; and Jolles, Georges, to Rhone-Poulenc S.A. Process for the preparation of cyclopeptides derived from polymyxins. 3,817,973, Cl. 260-112.500.

Bourassa, Hugh A.: *See—*
Sorenson, Charles E.; Stubblefield, Clyde D.; Debaillie, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., 3,816,985.

Bourassa, Pierre M. Automatic transportation system car units and control circuits therefor. 3,817,182, Cl. 104-88.000.

Bourgeois, Joseph F.; and Grace, James M., to Amana Refrigeration, Inc. Lubricating means for trash compactor ram. 3,817,352, Cl. 184-5.000.

Boustany, Kamel; and D'Amico, John Joseph, to Monsanto Company. 2-Aminobenzoazoles as activators for vulcanization of rubber. 3,817,948, Cl. 260-79.50b.

Boutmy, Patrick E.; Le Fort, Gilbert J.; and Betoule, Daniel J. M., to Societe Anonyme de Telecommunications. Regenerative repeater output stage for bipolar coded message signals. 3,818,360, Cl. 330-15.000.

Bowden Roy Dennis; and Seaton, Thomas, to Imperial Chemical Industries Limited. Halogenated pyridine derivatives. 3,818,016, Cl. 260-290.0hl.

Bowler, Lauren L.; and Johnston, Laird E., to General Motors Corporation. Anti-lock brake system. 3,817,585, Cl. 303-21.00f.

Boyd, John F.: *See—*
Dowling, Donald J.; Boyd, John F.; and Fuchs, James A., 3,818,323.

Bozer, Keith B.; and Cooper, Ronald H., to Dow Chemical Company, The. Cementitious compositions. 3,817,767, Cl. 106-90.000.

Bracing Systems, Inc.: *See—*
William, John G., 3,817,006.

Brain, Alfred E.: *See—*
Fennema, Claude L.; Brain, Alfred E.; Rosen, Charles A.; and Yarborough, John M., 3,818,191.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Mildewcide for paint. 3,817,760, Cl. 106-15.0af.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Mildewcide for paint. 3,817,761, Cl. 106-15.0af.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Mildewcide for paint. 3,817,762, Cl. 106-15.0af.

Bramley, Robert K.: *See—*
Sorenson, Charles E.; Stubblefield, Clyde D.; Debaillie, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., 3,816,985.

Brandt, Edison R., to Polaroid Corporation. Remote control system for photographic apparatus. 3,818,499, Cl. 354-238.000.

Brange, Lennart Bertil Vilhelm: *See—*
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Branscheid, Werner: *See—*
Mayer, Karl; and Branscheid, Werner, 3,817,668.

Braswell, James W. Flushing apparatus. 3,816,856, Cl. 4-58.000.

Brauer, William Alvin. Vehicle position indicator. 3,817,203, Cl. 116-28.00r.

Braun Aktiengesellschaft: *See—*
Gersing, Eberhard, 3,818,277.

Braun, Edgar: *See—*
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Braun, Gerald L.: *See—*
Braun, Melvin D.; Braun, Gerald L.; and Braun, John F., 3,817,410.

Braun, John F.: *See—*
Braun, Melvin D.; Braun, Gerald L.; and Braun, John F., 3,817,410.

Braun, Melvin D.; Braun, Gerald L.; and Braun, John F. Field cutter spout stabilizer. 3,817,410, Cl. 214-42.00a.

Braun, Ralph V.; and Schwoerer, Jerome L., to Kimberly-Clark Corporation. Process for making nonwoven scrims. 3,817,807, Cl. 156-181.000.

Brawner, Carle C., Jr.: *See*—
United States of America, National Aeronautics and Space Administration, 3,817,627.

Bremerkamp, Wilbert W.: *See*—
Renius, Otto; and Bremerkamp, Wilbert W., 3,817,030.

Brenski, Edwin F.; Draayer, Jan; Reynolds, Nigel J. E.; Rice, Verner K.; Schulte, Donald L.; Wedmore, William R.; Wilber, John A.; Buhrke, Rolfe E.; and Van Bosse, John G., to GTE Automatic Electric Laboratories Incorporated. Control complex for TSPS telepone system. 3,818,455, Cl. 340-172.500.

Bretschneider, Hermann; Grassmayr, Klaus; Hohenlohe-Oehringen, Kraft; and Grussner, Andre, to Hoffmann-La Roche Inc. Processed and intermediates for sulfonylurea derivatives. 3,818,027, Cl. 260-307.00d.

Brezosky, Bernard J., to General Electric Company. Means for supporting roller assemblies in a dishwasher tub. 3,817,590, Cl. 312-341.00r.

Bridgeport Metal Goods Manufacturing Company, The: *See*—
Vasas, Martin M., 3,817,637.

Bridgestone Tire Company Limited: *See*—
Furukawa, Junji; Kobayashi, Eiichi; and Kawagoe, Takahiro, 3,817,968.
Yabe, Toshinori, 3,817,812.

Bright, Royal E.: *See*—
Yardley, John P.; Bright, Royal E.; Rees, Richard W.; and Smith, Herchel, 3,818,013.

Brimco Manufacturing Company: *See*—
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British Insulated Callender's Cables Limited: *See*—
Verne, Stefan; and Heggs, Thomas Geoffrey, 3,817,783.

British Petroleum Company Limited, The: *See*—
Gudin, Claude; and Peel, Eric, 3,816,960.

Brobeck, William R.: *See*—
Hill, Charles E.; and Brobeck, William R., 3,818,435.

Brocker, Dale C. Transducer including oscillator controlled by inductance with motion-sensitive core. 3,818,369, Cl. 331-65.000.

Brode, George L.; and Kawakami, James H., to Union Carbide Corporation. Polyamide-imides. 3,817,921, Cl. 260-49.000.

Brody, Warren M.; and Johnson, Avery R. Soft control materials. 3,818,487, Cl. 340-407.000.

Bronson, Elwin J.: *See*—
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Brook, David E.: *See*—
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Brooks, Eric Howard; and Morris, Arthur, to Imperial Chemical Industries Limited. Process for the production of polyesters. 3,817,931, Cl. 260-75.00r.

Brooks, James N.: *See*—
Chambers, William W.; Olander, Charles C.; and Brooks, James N., 3,818,247.

Broussard, Ernest E.: *See*—
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Brown & Williamson Tobacco Corporation: *See*—
Stungis, George E.; and Merker, Steven L., 3,818,335.

Brown, Alfred W.; and Moran, Richard J., to Owens-Corning Fiberglas Corporation. Apparatus for impregnating strands, webs, fabrics and the like. 3,817,211, Cl. 118-630.000.

Brown, Alvin E., to Saratoga Systems, Inc. Axial fluid flow and sound speed. 3,817,098, Cl. 73-194.00a.

Brown, David, Gear Industries, Limited: *See*—
Whateley, Eric Albert; and Pengilly, Eric Alexander, 3,817,123.

Brown, Francis Barton: *See*—
Erickson, John W.; Brown, Francis Barton; and Petrie, Harold L., 3,817,659.

Brown, Ilo M., to Ballantyne of Omaha, Inc. Run-out and safety switch mechanism for motion picture projectors. 3,817,611, Cl. 352-155.000.

Brown, James R. Underground pipe warning and identification apparatus. 3,817,411, Cl. 214-138.00r.

Brown, John F., Jr.: *See*—
Slusarczuk, George M. J.; and Brown, John F., Jr., 3,817,861.

Brown, Kenneth W., to Welding Instituted, The. Pulse welding processes. 3,818,176, Cl. 219-124.000.

Brown, Melancthon S.; deceased (by Kohn, Gustave K.; special administrator), to Chevron Research Company. Substituted triazines. 3,817,742, Cl. 71-93.000.

Brown, Ralph D., to Westinghouse Electric Corporation. Safety oil strainer. 3,817,380, Cl. 210-131.000.

Bruenner, Rolf S.: *See*—
Oberth, Adolf E.; and Bruenner, Rolf S., 3,817,945.

Brumm, Karl; and Thaler, Konrad, to General Motors Corporation. Two-stage internal combustion engine of the rotary-piston type. 3,817,220, Cl. 123-8.050.

Brundage, Horace W.: *See*—
Bayless, Frank K.; Brundage, Horace W.; Evans, Robert A.; and Hoover, John W., 3,816,872.

Bruner, Albert H., to Monsanto Company. Heated roll deposit cleaning apparatus. 3,817,061, Cl. 68-5.00d.

Brunetti, Heimo: *See*—
Dexter, Martin; Knell, Martin; and Brunetti, Heimo, 3,817,914.

Brunner, Julius; Schwendtner, Manfred; and Steinmuller, Gunter, to Siemens Aktiengesellschaft. Mark-space modulator for a time-division multiplier. 3,818,206, Cl. 235-194.000.

Brunty, Fred. Bread making assessory. 3,816,918, Cl. 30-114.000.

Bryans, David F.: *See*—
Lim, Alexander T.; and Bryans, David F., 3,817,049.

Bryce, William Dean; and Street, Peter George, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Combustion devices. 3,817,690, Cl. 431-350.000.

Bubniak, William C.; Huellmantel, Louis W.; and Mitchell, Harry R., to General Motors Corporation. Mass flow air meter. 3,817,099, Cl. 73-199.000.

Buchel, Karl Heinz: *See*—
Regel, Erik; Buchel, Karl Heinz; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,818,029.

Buchele, Wesley F.; Peprah, Ignatius K.; and Mahmoud, Ali R., to Iowa State University Research Foundation, Inc. Spring-mounted rasp bar sheller. 3,817,256, Cl. 130-6.000.

Buchel,Karl Heinz: *See*—
Timmler, Helmut; Buchel,Karl Heinz; and Piempel, Manfred, 3,818,030.

Buchzik, Charles M.: *See*—
Strasser, Jurgen H.; Wood, Philip; Berticevich, Edward N.; and Buchzik, Charles M., 3,817,259.

Buck, Gordon H., to Mattel, Inc. Selectable voice unit. 3,817,536, Cl. 274-1.00a.

Buckeye Stephens Limited: *See*—
Bardet, Michel, 3,817,214.

Buckingham, Amyand David: *See*—
Barron, Laurence David; and Buckingham, Amyand David, 3,817,634.

Buckles, Richard G.; and Yum, Su Il, to Alza Corporation. Self powered device for delivering benefical agents. 3,817,248, Cl. 128-260.000.

Buckley, Daniel T. Medicament dispenser. 3,817,428, Cl. 222-173.000.

Buckner, Morgan D., to Dow Chemical Company, The. Apparatus for the preparation of plastic foam. 3,817,669, Cl. 425-4.00c.

Bucode, Inc.: *See*—
Mosciatti, Roger; Foley, Thomas P.; and Buyaskas, John J., 3,817,469.

Bucourt, Robert; and Pierdet, Andre, to Roussel Uclaf. Novel 7α-methyl-13β-alkyl-18,19-dinor-$\Delta^{4,9,11}$. 3,818,054, Cl. 260-397.300.

Budrys, Vitolis: *See*—
Erickson, John W.; and Budrys, Vitolis, 3,817,446.

Buedel, Charles K.: *See*—
Vrba, James J.; and Buedel, Charles K., 3,818,143.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Gaston-Breton, Hubert, 3,817,698.
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francois, 3,817,699.

Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Hydroxy 3,4-dihydro-2H-1,4-benzoxazines and benzthiazines. 3,817,995, Cl. 260-24.40r.

Buhrke, Rolfe E.: *See*—
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Bukvich, John T.: *See*—
Wennerberg, Arnold N.; and Bukvich, John T., 3,817,874.

Bullock, Kenneth W., to Marine Construction & Design Co., mesne. Shrimp cleaning machine. 3,816,877, Cl. 17-73.000.

Bundo, Teruo, to Tokyo Yakuhin Kaihatsu Kabushiki Kaisha. Method of preparing a water-soluble powder containing active components from mineral spring waters of spas and product produced thereby. 3,817,308, Cl. 159-48.00r.

Burckhardt, Manfred H.; and Schwerdt, Paul, to Daimler-Benz Aktiengesellschaft. Rapidly shifting, leak-proof electromagnetically actuated discharge valve. 3,817,491, Cl. 251-141.000.

Burdick Neal M. Apparatus for providing output indications responsive to the movement of a moving body. 3,818,341, Cl. 324-163.000.

Burgener, Horst: *See*—
Winkelstrater, Claus; Burgener, Horst; and Hubrich, Christoph, 3,817,667.

Burgin, Luther B. Slope control console. 3,816,937, Cl. 33-366.000.

Burgos, D. Jose Soto. Coiled resilient ball. 3,817,520, Cl. 273-58.00d.

Burkhalter, Henri, to Bobst, J., & Fils SA. Device for kinematic connection. 3,817,156, Cl. 93-36.00r.

Burlington Industries, Inc.: *See*—
Small, Ronald J., 3,816,994.

Burns, Kenneth S.; Ferment, George R.; and Waugh, Roger C., to Celanese Corporation. Process for the production of carbonaceous tapes. 3,818,082, Cl. 264-29.000.

Buromaschinen, Walter, GmbH: *See*—
Schleifer, Klaus, 3,818,457.

Burroughs Corporation: *See*—
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Lazzarotti, S. James; Wojtowicz, Edward A.; and Hunter, James R., 3,817,516.
Radcliffe, Arthur J., Jr., 3,818,443.

Burstlein, Eugene Marie. Screening process and apparatus. 3,817,376, Cl. 209-233.000.

Busch, Norbert: *See*—

Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,818,000.
Buschkamp, Heinz: *See—*
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Buslaev, Jury Alexandrovich: *See—*
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Butler, Anthony J.; Graham, Craig E.; and Musolf, Martin C., to Dow Corning Corporation, The. Silicone latex caulk. 3,817,894, Cl. 260-29.20m.
Butterell, Robin Darker: *See—*
Hill, Thomas Bernard; and Butterell, Robin Darker, 3,817,183.
Butterfield, James F. Stereo television microscope. 3,818,125, Cl. 178-6.500.
Butts, Ernest O.; and Hall, John S., to Hambro Structural Systems Limited. Building method. 3,818,083, Cl. 264-31.000.
Buxbaum, Lothar; and Hrach, Josef, to Ciba-Geigy A.G., mesne. Polycondensation in droplet and compact liquid phases. 3,817,929, Cl. 260-75.00m.
Buxton, Aldon L.; Donnerstag, Leonard; and Gryctko, Carl E., to I-T-E Imperial Corporation. Electrical panel board with ground and neutral plug-in buses. 3,818,282, Cl. 317-119.000.
Buyaskas, John J.: *See—*
Mosciatti, Roger; Foley, Thomas P.; and Buyaskas, John J., 3,817,469.
Bywater, John Roger. Cam motion control unit. 3,817,228, Cl. 123-90.120.
Cadborough Engineering Company Ltd.: *See—*
Scragg, William Ewert, 3,817,848.
Caelus Memories, Inc.: *See—*
Herbig, Paul G., 3,817,088.
Cairncross, Allan; and Sheppard, William Arthur, to Du Pont de Nemours, E. I., and Company. Process for coating substrates with copper by thermal decomposition of selected fluoroorganocopper (I) compounds. 3,817,784, Cl. 117-227.000.
Caldwell, William M., Jr.: *See—*
Moy, David; and Caldwell, William M., Jr., 3,817,720.
Calhoun, Clyde D., to Minnesota Mining and Manufacturing Company. Fly fishing reel. 3,817,470, Cl. 242-84.20b.
California Injection Molding Co., Inc.: *See—*
DeWalker, Rober D.; and Howe, Blair E., 3,817,402.
Camacho, Salvador L.; and Magor, James K. Method of converting a fuel burning batch annealing furnace to a gas plasma heat source type. 3,816,901, Cl. 29-426.000.
Camacho, Salvador L., to Technology Application Service Corporation. Long arc column forming plasma generator. 3,818,174, Cl. 219-121.00p.
Cameron Athletic Corporation: *See—*
Davis, Otho; and Gardiner, Donald A., 3,816,946.
Cameron Iron Works, Inc.: *See—*
Meynier, Maurice J., III, 3,817,326.
Campbell, John B., to Du Pont de Nemours, E. I., and Company. Branched-chain hydrocarbon elastomers. 3,817,883, Cl. 260-5.000.
Campbell, John B.; and Thurn, Robert Dean, to Du Pont de Nemours, E. I., and Company. Ozone resistant compositions. 3,817,884, Cl. 260-5.000.
Campbell, Robert W.: *See—*
Hill, Harold Wayne, Jr.; and Campbell, Robert W., 3,817,903.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Stubbs, Royston A., 3,817,085.
Canadian Patents and Development Limited: *See—*
Bayley, Henry S.; and Carlson, Walter E., 3,818,089.
Sirianni, Aurelio F.; and Puddington, Ira E., 3,817,974.
Cand-Aire Industries, Inc.: *See—*
Principe, Andrew H.; and Glynn, Emmett P., 3,817,108.
Canon Camera Kabushiki Kaisha: *See—*
Nagashima, Shinichiro, 3,817,867.
Canon Kabushiki Kaisha: *See—*
Katayama, Hajime; and Kimura, Yoshimasa, 3,817,134.
Tanikoshi, Kinzi; and Takigawa, Tomoshi, 3,818,494.
Canon Kabushiki Kaisha, mesne: *See—*
Matkan, Josef, 3,818,492.
Cantenot, Paul. Silo for granular or pulverulent materials. 3,817,407, Cl. 214-17.0da.
Cappuyns, Joseph Marie: *See—*
Smolderen, Albert Emiel; and Cappuyns, Joseph Marie, 3,817,468.
Capy, Marcel, to Compagnie Europeenne pour l'Equipement Menager, CEPEM. Gas burner having lateral openings and a device for deflecting the flames upwards. 3,817,689, Cl. 431-349.000.
Carabbio, Robert M.: *See—*
Voorhees, John E.; and Carabbio, Robert M., 3,817,067.
Caradeur, Robert R.; Cardone, John E.; and Broussard, Ernest E., to Casco, Inc. Tube cleaning device. 3,817,262, Cl. 134-167.00c.
Cardone, John E.: *See—*
Caradeur, Robert R.; Cardone, John E.; and Broussard, Ernest E., 3,817,262.
Carignan, Lucien W.: *See—*
Barrette, Oliver T., Jr.; and Carignan, Lucien W., 3,816,876.
Carlino, Anthony L. Golf club. 3,817,534, Cl. 273-168.000.
Carlson, Arthur E., to Winpower Manufacturing Company. Generator, synchronous motor and phase converter. 3,818,316, Cl. 322-1.000.
Carlson, Henry B.; and Pinezich, John R., to Andrew Carlson & Sons, Inc. Sanitary drainage system. 3,817,864, Cl. 210-170.000.
Carlson, Norman Arthur; and Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. Sulfurized mono-esters of tall oil fatty acids and primary oxo alcohols. 3,817,971, Cl. 260-97.500.
Carlson, Sheldon D., to Jefferson Chemical Company. Process for preparing dimorpholinodiethyl ether. 3,817,997, Cl. 260-246.00b.
Carlson, Stanley H. Automatic indexing head for machining a work piece. 3,817,002, Cl. 51-216.0nd.
Carlson, Walter E.: *See—*
Bayley, Henry S.; and Carlson, Walter E., 3,818,089.
Carlyle, William Brian: *See—*
Riding, Harry; Carlyle, William Brian; and Morris, Edgar, 3,817,818.
Carnewal, Jose A. C. L.; Decruyenare, Trudo M. J.; and Mesure, Georges M., to Clayson N.V. Rotary air filter. 3,816,981, Cl. 55-267.000.
Caron, Roger P.; and Howard, Thomas P., to Water Control Products, Inc., mesne. Hydraulic flush tank with improved seating and resealing means. 3,817,286, Cl. 137-628.000.
Caron, Roger P.; and Howard, Thomas P., to Water Control Products, Inc., mesne. Hydraulic flush tank with improved seating and resealing means. 3,817,489, Cl. 251-38.000.
Carpenter Technology Corporation: *See—*
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Carrier Corporation: *See—*
Greever, James E., 3,817,210.
Huesgen, Eugene L.; and Geary, Carl H., 3,817,655.
Ingalls, Douglas J.; and Abell, Richard S., 3,817,661.
Law, John; and Neill, Donald E., 3,817,651.
Lim, Alexander T.; and Bryans, David F., 3,817,049.
Carrotte, Frederick Henry; and Ellis, John Ernest, to Courtaulds Limited. Pattern discs. 3,817,060, Cl. 66-156.000.
Carson, Kenneth G.; and Rekai, Andre. Temperature monitoring and control system. 3,818,285, Cl. 317-133.500.
Carter, Albert W.: *See—*
Needham, James C.; and Carter, Albert W., 3,818,177.
Carter, John L.; and McGowan, Joseph W., to United States of America, Army. Electron beam semiconductor amplifier device. 3,818,363, Cl. 330-43.000.
Carter, Warren E.; and Songer, Hubert D., to Perfect Equipment Corporation. Ball joint gauge. 3,817,640, Cl. 403-138.000.
Casco, Inc.: *See—*
Caradeur, Robert R.; Cardone, John E.; and Broussard, Ernest E., 3,817,262.
Case, J. I., Company: *See—*
Klee, Maurice, 3,817,114.
Case, W. Woodrow. Apparatus for coating edible material. 3,817,206, Cl. 118-7.000.
Casio Computer Co., Ltd.: *See—*
Kashio, Toskio, 3,817,023.
Castiglia, Frank J.: *See—*
Cooper, Paul W., 3,817,500.
Catalano, Joseph. Window guard. 3,816,964, Cl. 49-127.000.
Caterpillar Tractor Company: *See—*
Schexnayder, Lawrence F., 3,817,276.
Catlow, David Brian: *See—*
Bonniface, David William; and Catlow, David Brian, 3,817,841.
Cavallero, Louis Thomas; and Elnicki, Walter Joseph, to Aer Corporation. Hydrocarbon oxidizer system. 3,817,687, Cl. 431-202.000.
Cavcom, Inc.: *See—*
Benson, David A., 3,818,446.
Celanese Corporation: *See—*
Burns, Kenneth S.; Ferment, George R.; and Waugh, Roger C., 3,818,082.
Celani, Pasquale J., to Mobil Oil Corporation. Regeneration gas distributor grid. 3,817,280, Cl. 137-592.000.
Centre Belge d'Etude de la Corrosion: *See—*
Pourbaix, Marcel, 3,817,795.
Centre Europeen de Recherches Mauvernay C.E.R.M.: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,818,000.
C.E.R.P.H.A. (Centre Europeen de Recherches Pharmacologiques): *See—*
Thuillier, Germaine, born Nachmias; and Geffroy, Francoise, born Remy, 3,818,021.
Chafer, Henry James; and Wright, Owen Edgar, to Rotax Limited. Spark ignition circuits. 3,818,253, Cl. 307-314.000.
Chagin, Vladimir Ivanovich: *See—*
Balepin, Alexandr Alexeevich; Bobolev, Alexandr Vasilievich; Buslaev, Jury Alexandrovich; Chagin, Vladimir Ivanovich; Emanuel, Nikolai Markovich; and Sergeev, Andrei Ivanovich, 3,818,051.
Challandes, Claude, to Montres Rolex S.A., Manufacture des Rolex S.A. and Societe anonyme de la fabrique d'horlogerie Le Coultre & Cie. Device for transforming oscillating movement into rotary movement. 3,817,110, Cl. 74-142.000.
Challier, Jean-Louis; Jenmart, Claude; Messer, Mayer Naoum; and Simon, Pierre, to Rhone-Poulenc. Piperazin-1-yl carbonyloxy-isoindolin-1-ones. 3,818,011, Cl. 260-268.0bc.

Chalmers, John Stuart, to Lee, Raymond, Organization, Inc., The. Toilet device for use by dogs. 3,817,213, Cl. 119-1.000.

Chalvignac, Jean Ferdinand, to VIRAX. Device for fashioning a flange on a wall, and more particularly on a pipe wall. 3,817,071, Cl. 72-120.000.

Chambers, Charles W., Jr.; and Kiko, Frederick J., to Lorain Products Corporation. Method and apparatus for amplifying signal transmission through transmission lines. 3,818,151, Cl. 179-170.00t.

Chambers, Charles W., Jr.; and Kiko, Frederick J., to Lorain Products Corporation. Magnetizing current compensating circuit. 3,818,338, Cl. 324-127.000.

Chambers, Derek; and Harley A. Leonard, to Raytheon Company. Display power system. 3,818,128, Cl. 178-6.800.

Chambers, William W.; Olander, Charles C.; and Brooks, James N., to Robertshaw Controls Company. Two-lead electrical control apparatus. 3,818,247, Cl. 307-252.00f.

Chelminski, Stephen V., to Bolt Associates, Inc. Airgun repeater powered pile driver. 3,817,335, Cl. 173-127.000.

Chemetron Corporation: *See—*
Allen, William Merrill, 3,817,136.

Chemiebau, Dr. A. Zieren GmbH: *See—*
Sasse, Joachim, 3,818,088.

Chemische Werke Huls Aktiengesellschaft: *See—*
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Turck, Ulrich, 3,817,899.

Chevron Research Company: *See—*
Brown, Melancthon S., 3,817,742.
Ellis, John R. B.; and Franklin, Frederick C., 3,817,724.
Franke, Hans G., 3,817,993.
Fries, Bernard A., 3,818,227.
Neuman, Charles H., 3,817,328.
Sieg, Robert P.; and White, Robert J., 3,817,725.

Chiba, Tsuneyo; and Masaki, Akira, to Hitachi, Ltd. Universal logical integrated circuit. 3,818,252, Cl. 307-303.000.

Chicago Hydraulics Inc.: *See—*
Gilberto, Matthew J., 3,817,458.

Chien, Jack Hui-Ning; and Oswald, Richard Karl, to International Business Machines Corporation. Automatic head width correction. 3,818,502, Cl. 360-77.000.

Chiesa, Luigi, to Morenar S.A. Automatic apparatus for taking and developing photographs. 3,818,497, Cl. 354-89.000.

Childs, Richard L., to Rockwell International Corporation. Loom stop motion. 3,817,293, Cl. 139-369.000.

Chilton, John Reginald, to Imperial Chamical Industries Limited. Reduction of acidity in the production of esters. 3,818,071, Cl. 260-475.00a.

Chinn, Leland J. 6α,7α-Dihydro-3'H-cyclopropa[6,7] pregna-6-diene-3,15,20-trione and congeners. 3,818,053, Cl. 260-397.300.

Chino, Yasuyoshi: *See—*
Sato, Ryozi; Chino, Yasuyoshi; and Endo, Tatus, 3,818,079.

Chizoda Chemical Engineering & Construction Co.: *See—*
Aoki, Ichizo; and Kitsukawa, Yoshitsugi, 3,817,046.

Chomerics, Inc.: *See—*
Seeger, Richard E., Jr.; and Lynn, William J., 3,818,279.

Christenson, Gerald A., to GTE Automatic Electric Laboratories, Incorporated. Adjustable slow and delayed pulse oscillator. 3,818,367, Cl. 331-45.000.

Christopher, Charles A.; Allen, Joseph C.; and Kolaian, Jack H., to Texaco Inc. Secondary recovery method. 3,817,330, Cl. 166-275.000.

Chruch, Peter K.; and Knutson, Oliver J., to Kaman Sciences Corporation, mesne. Ceramic treating process and product produced thereby. 3,817,781, Cl. 117-169.000.

Chrysler Corporation: *See—*
Sarto, Jorma O., 3,817,230.

Chun, Myung K.; and Bischoff, John T., to General Electric Company. Single pockels cell double pulsing scheme. 3,818,373, Cl. 331-94.50q.

Ciaraldi, Anthony: *See—*
Matz, Bjorn J.; Nenninger, Theodore P.; Whitney, James C.; Ciaraldi, Anthony; and Wilder, Leslie N., 3,817,436.

Ciavattoni, Anthony; and Schubert, Thomas J., to Pennwalt Corporation. Dental chair with adjustable headrest. 3,817,576, Cl. 297-408.000.

Ciba-Geigy: *See—*
Barlocher, Toni; and Ebert, Edith, 3,818,034.

Ciba-Geigy AG: *See—*
Jaeger, Horst, 3,818,058.
Meyer, Hans Rudolf; and Siegrist, Adolf Emil, 3,817,991.
Nikles, Erwin, 3,818,012.

Ciba-Geigy A.G., mesne: *See—*
Buxbaum, Lothar; and Hrach, Josef, 3,817,929.

Ciba-Geigy Corporation: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,818,075.
Baerlocher, Toni; and Ebert, Edith, 3,818,031.
Baumann, Marucs; and Bosshard, Hans, 3,818,050.
Dexter, Martin; Knell, Martin; and Brunetti, Heimo, 3,817,914.
Huebner, Charles Ferdinand, 3,818,020.
Kuhne, Manfred; and Vogel, Christian, 3,817,741.
Moser, Hans; and Vogel, Christian, 3,818,032.
Wehrli, Hansuli; and Jeger, Oskar, 3,817,989.
Werner, Lincoln Harvey; and Finch, Neville, 3,818,099.

Ciccolella, Joseph A.: *See—*
Heenan, Sidney A.; Ciccolella, Joseph A.; Majewski, Norbert; and Montalbano, Anthony J., 3,818,218.

Cincinnati Milacron-Heald Corporation: *See—*
Uhtenwoldt, Herbert R., 3,816,996.

Cinque, Alphonse P. Optical enlarging device. 3,817,613, Cl. 353-67.000.

Ciochetto, Joseph James: *See—*
Greenberger, Joseph Irwin; and Ciochetto, Joseph James, 3,817,318.

Cities Service Oil Company: *See—*
Moy, David; and Caldwell, William M., Jr., 3,817,720.

Citizen Watch Company Limited: *See—*
Noguchi, Kazuo, 3,817,024.

Claes, Frans Henri; Libeer, Marcel Jan; and Vanassche, Willy Joseph, to AGFA-Gevaert N.V. Manufacture of photographic silver halide materials. 3,817,756, Cl. 96-94.00r.

Clark, David C.: *See—*
Bergstrom, Darryl K.; and Clark, David C., 3,817,508.

Clark, Norman Owen, to English Clays Lovering Pochin & Company Limited. Processing of particulate materials. 3,817,457, Cl. 241-4.000.

Clarke, Charles J., Jr., to Honeywell Information Systems Inc. Stepping motor speed control apparatus. 3,818,261, Cl. 318-696.000.

Clarke, Terence James: *See—*
Saunders, Peter Charles; Revell, Dennis William; and Clarke, Terence James, 3,818,193.

Claus, Karl M.: *See—*
Wack, Henry P.; and Claus, Karl M., 3,817,012.

Clay, Frank W. Means for relatively varying the position of an axis. 3,817,120, Cl. 74-571.001

Clayson N.V.: *See—*
Carnewal, Jose A. C. L.; Decruyenare, Trudo M. J.; and Mesure, Georges M., 3,816,981.

Clemence, Francois; and Le Martret, Odile, to Roussel-UCLAF. -2-Oxy-3-methoxy-5-allyl-benzamides. 3,817,990, Cl. 260-247.70h.

Clemens, David H.; and Hamann, Herman C., to Rohm & Haas Company. Polyol polymethocrylate crosslinked strong base anion exchange resins. 3,817,878, Cl. 260-2.10e.

Clishem, Thomas A.; Duerr, Francis R.; and Snook, Carl T., to Corhart Refractories Company. Electrical furnace for melting glass. 3,818,112, Cl. 13-6.000.

Coakley, Thomas A.; and Sullivan, James C., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,817,775, Cl. 117-72.000.

Coal Industry (Patents) Limited: *See—*
Wilson, Raymond George, 3,817,578.

Coate Burial Vault Inc.: *See—*
Yost, Kenneth J., 3,817,858.

Coats, John H.: *See—*
Argoudelis, Alexander D.; Coats, John H.; and Sebek, Oldrich K., 3,817,979.

Codata Corporation: *See—*
Dorfman, Bertrand; and Lizzio, N. John, 3,818,481.

Coffman, Homer R. Cementitious precast construction unit. 3,817,289, Cl. 138-515.000.

Cohen, Edgar A., to Columbia Pictures Industries, Inc. Music stave. 3,817,145, Cl. 84-471.000.

Coker, Frank B.: *See—*
Fomenko, Sergei M.; Coker, Frank B.; Hauser, Frank W.; Muller, Alex M.; Smith, Remy J.; and Winston, Theodore, 3,818,126.

Colaiace, Victor Vincent; and Miller, Melville Wallace, to Eastman Kodak Company. Zoom lens mount. 3,817,601, Cl. 350-187.000.

Coleman, Michael G., to Motorola, Inc. Light-emitting and light-receiving logic array. 3,818,451, Cl. 340-166.0el.

Colibri Lighters Limited: *See—*
Retzler, William, 3,817,692.

Collins, John Joseph, to Union Carbide Corporation. Purification of hydrocarbon feedstocks. 3,816,975, Cl. 55-33.000.

Collins, S. J.: *See—*
Gilmore, Oscar P., 3,817,317.

Colquett, Jack L.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Pease, William C., III; and Colquett, Jack L., 3,816,970.

Columbia Pictures Industries, Inc.: *See—*
Cohen, Edgar A., 3,817,145.

Colwell, Clifton P.: *See—*
Van Arnam, Donald E.; and Colwell, Clifton P., 3,817,177.

Combustion Engineering Inc.: *See—*
Deve, Vagn, 3,817,314.
Parobek, Edward George, 3,817,697.

Commercial Solvents Corporation: *See—*
Young, Vernon V., 3,818,044.

Commissariat a l'Energie Atomique: *See—*
Bernard, Jean; Borel, Joseph; Glotin, Philippe; and Lacour, Jacques, 3,816,905.

Commissariat a l'Engergie Atomique: *See—*
Glachet, Charles; Guilbaud, Jean-Pierre; and Vertut, Jean, 3,817,403.

Communications Satellite Corporation: *See—*
Puente, John G., 3,818,348.
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; and Maillet, Wilfrid G., 3,818,453.

Compagnie de Saint-Gobain: *See—*
Gringras, Michel, 3,817,776.

Hennequin, Francois Maurice, 3,817,737.
Compagnie Europeenne pour l'Equipement Menager, CEPEM: *See*—
Capy, Marcel, 3,817,689.
Compagnie Generale des Etablissements: *See*—
Rouzier, George, 3,817,890.
Comress: *See*—
Deese, Donald R., 3,818,458.
Conca, Romeo John; Hergert. Herbert Lawrence; Maranville, Lawrence Frank; and Huges, Albert Marian, to International Telephone and Telegraph Corporation. Bleaching and refining process for producing dissolving pulps. 3,817,825, Cl. 162-89.000.
Conibear, Frank. Actuator for animal trap. 3,816,955, Cl. 43-90.000.
Connell, Richard Allen, to Pitney-Bowes, Inc. Optical bar code reading method and apparatus having an X scan pattern. 3,818,444, Cl. 340-146.30f.
Connelly, Daniel Joseph; Reuter, George Henry; and Rudy, James A., to Melchior Armstrong Dessau, Inc. Control circuit for preventing rapid recycling in automatic systems. 3,817,052, Cl. 62-158.000.
Connerat, Edwin B., to Hennessy Products, Incorporated. Transport carrier and container securing structure. 3,817,570, Cl. 296-35.00a.
Conrad, Horst: *See*—
Niederdellmann, Georg; Bormann, Heinrich; Conrad, Horst; and Oertel, Gunter, 3,817,933.
Conradi, Eugene P.: *See*—
De Puydt, Frank A.; and Conradi, Eugene P., 3,817,548.
Constantino, Petronilo C., & Associates: *See*—
Zoleta, Jose C., 3,817,043.
Consumers Glass Company Limited: *See*—
Steele, Barbara A.; and Gevaert, Lieven H., 3,817,729.
Continental Can Company, Inc.: *See*—
Moller, Jens L.; and Ruekberg, Herbert S., 3,817,419.
Continental Oil Company: *See*—
Starks, Charles M., 3,818,043.
Controls Company of America: *See*—
Orth, Charles D., 3,817,053.
Cook, Roger J.; and McGeachy, Donald E., to Numatics, Incorporated. Connector for plastic tube. 3,817,562, Cl. 285-233.000.
Cooper, Paul W., to Castiglia, Frank J. Apparatus for retarding freezing of a fluid. 3,817,500, Cl. 261-77.000.
Cooper, Ronald H.: *See*—
Bozer, Keith B.; and Cooper, Ronald H., 3,817,767.
Coopersmith, Myron; Kochenderfer, Wayne N.; and Felty, Lanny G., to Esso Research and Engineering Company. Composition and process for lubricating the skin. 3,818,105, Cl. 424-358.000.
Copar Corporation: *See*—
Schmidt, Robert W., 3,818,224.
Copes, Joseph P.; and Lorenz, Donald H., to GAF Corporation. Use of polymeric complex for recovering metals. 3,817,745, Cl. 75-108.000.
Copes-Vulcan, Inc.: *See*—
Karnofsky, George B., 3,816,871.
Copperweld Steel Company: *See*—
Zinsser, Harry F.; and Locke, Richard E., 3,818,173.
Copyer Co., Ltd.: *See*—
Kitahara, Makoto; Ishikawa, Shozo; Arita, Tetsuo; and Dohi, Masaaki, 3,817,749.
Corey, Albert E.; Donermeyer, Donald D.; Fantl, Joel; and Williams, Charles R., to Monsanto Company. Poly(vinyl acetate-dialkyl maleate-acrylic acid) textile sizes. 3,817,892, Cl. 260-29.6ta.
Corhart Refractories Company: *See*—
Clishem, Thomas A.; Duerr, Francis R.; and Snook, Carl T., 3,818,112.
Cormier, Paul L., to Aqua Ski Launch Corp. Floating platform from which to start water skiing. 3,817,364, Cl. 193-2.00r.
Cornelius, Gail, to Wade, R. M., & Co. Circular irrigation system with portable pivot point. 3,817,455, Cl. 239-177.000.
Corning Glass Works: *See*—
Wiley, Robert F., 3,817,714.
Costa, Allan. Safety closure cap for containers. 3,817,416, Cl. 215-9.000.
Cotter, Ashby M. Screwdriver level. 3,816,864, Cl. 7-1.00m.
Cotter, William L. Coordinated digitizer incremental system. 3,818,133, Cl. 178-18.000.
Couleur, John Francis: *See*—
Beard, Albert LeMessurier; Couleur, John Francis; Lange, Ronald Edwin; Montee, Robert Frank; and Ruth, Richard Leroy, 3,818,460.
Coulter, J. Roland; Hundley, Warren; and Koblick, Sol N., to Tull Aviation Corporation. Navigation aid transmitter-monitor system. 3,818,476, Cl. 343-100.0ap.
Counsell, Raymond E.; and Lu, Matthias C. H., to University of Michigan, The Regents of the. 17(Aralpylaminoalkyl)androstan-3β-ols,Δ⁵ derivative thereof, ethers and esters corresponding. 3,818,055, Cl. 260-397.500.
Cournoyer, Hector S., to United Commodities, Inc. Hair dryer. 3,816,940, Cl. 34-101.000.
Courtaulds Limited: *See*—
Carrotte, Frederick Henry; and Ellis, John Ernest, 3,817,060.
Cox, Eugene F.: *See*—
Hostettler, Fritz; and Cox, Eugene F., 3,817,882.
Cox, James P., to Martin, Robertson & Bain Ltd. Mass-balanced vibrating conveyor. 3,817,370, Cl. 198-220.0cb.
Cox, Robert M., to SLI Industries. Hydraulic actuator with mechanical feedback. 3,817,150, Cl. 91-186.000.
Craft, David John, to International Business Machines Corporation. Priority- data handling system and method. 3,818,447, Cl. 340-147.01p.
Crane, Merlin L., to Deutsch Company Electronic Components Division, The. Zero insertion force electrical connector. 3,818,419, Cl. 339-74.00r.
Crankshaw, John H., to Dynetics, Inc. Sound isolation coupling. 3,817,056, Cl. 64-14.000.
Creach, Eugene F.: *See*—
De Luca, Anthony F.; Creach, Eugene F.; and Jones, Michael H., 3,817,435.
Creusot-Loire: *See*—
Leroy, Pierre: and Sprunck, Emile (said Leroy assor. to), 3,817,505.
Creusot-Loire, Societe Anonyme, mesne: *See*—
Leroy, Pierre; Gombert, Marcel; and Sprunck, Emile, 3,817,744.
Cricchio, Renato, to Gruppo Lepetit S.p.A. Pyrono-rifamycins. 3,817,986, Cl. 260-239.30p.
Crockett, Ivan L.; and Davidson, Ian H., to Hewlett-Packard Company. Integrator providing automatic tangential base-line correction. 3,818,357, Cl. 328-127.000.
Cronin, Timothy H.; and Richardson, Kenneth, to Pfizer Inc. Hydroxyalkyl esters of quinoxaline-di-N-oxide-2-carboxylic acid. 3,818,007, Cl. 260-250.00r.
Crossan, Irvin D.: *See*—
Toporcer, Louis H.; and Crossan, Irvin D., 3,817,909.
Crosthwaite, James B. Auto body and frame puller. 3,817,074, Cl. 72-302.000.
Crotti, Renato, to Eddybel S.A. Apparatus for producing a coiled thread package. 3,816,889, Cl. 28-21.000.
Crow, George E. Afterburner for internal combustion engine. 3,817,032, Cl. 60-294.000.
Crowley, Walter A. Helicopter powered air cushioned platform. 3,817,479, Cl. 244-17.110.
Crownover, Joseph W.: *See*—
Bennett, Kenneth R.; and Crownover, Joseph W., 3,818,118.
Cuffe, Moses L.; and Frese, Ralph L. Step-up device. 3,817,554, Cl. 280-166.000.
Cummings, Clinton M., to Acme United Corporation. Disposavle scalpel handle and method of manufacture thereof. 3,817,077, Cl. 72-376.000.
Cummings, Jeffrey, to Imperial Chemical Industries, Limited. Probe holder. 3,817,707, Cl. 23-253.00c.
Cupler, John A., II. Non-captive tool change mechanism. 3,816,890, Cl. 29-26.00a.
Current, John Marvin: *See*—
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Cutri, Frank J; deceased (by Cutri, Louise; administrator). Pattern piece article and method of producing a printed pattern layout. 3,816,924, Cl. 33-17.00r.
Cutri, Louise: *See*—
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Dahele, Jashwant Singh: *See*—
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Dambroth, Jurgen; Wienbuttel, Gut; and Luneburg, Uber. Device for continuous winding of continuously running webs of material. 3,817,467, Cl. 242-56.00r.
D'Amico, John Joseph: *See*—
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Daugherty, Wilma J. Pump and valve. 3,817,284, Cl. 137-614.130.
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Davies, Terrence Ardern; and Quarmby, Raymond Barber, to Plessey Handel und investments A.G. Electrical connectors. 3,818,414, Cl. 339-17.00m.

Davis, George Bynum, Jr. Thermal voltage control for a Christmas tree lighting spring. 3,818,264, Cl. 315-72.000.

Davis, Otho; and Gardiner, Donald A., to Cameron Athletic Corporation. Football shoe and heel plate therefor. 3,816,946, Cl. 36-67.00r.

Davy-Ashmore Limited: *See—*
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Dawes, David Haddon, to Du Pont of Canada Limited. Fire-retardant plywood. 3,817,822, Cl. 161-165.000.

Dawn, Alan, to Perry, E. S., Limited. Fountain pen probe. 3,817,638, Cl. 401-239.000.

De Luca, Anthony F.; Creach, Eugene F.; and Jones, Michael H. Tank holder and transporter. 3,817,435, Cl. 224-45.0aa.

De Puydt, Frank A.; and Conradi, Eugene P., to Dico Company, Inc. Method and apparatus for stabilizing a caster wheel against whip action. 3,817,548, Cl. 280-89.000.

De Soto, Inc.: *See—*
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Deese, Donald R., to Comress. Method and apparatus for monitoring a general purpose digital computer. 3,818,458, Cl. 340-172.500.

Degtyarev, Ivan Yakovlevich: *See—*
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Derman, Karl Gustav Einar; and Bohman, Nils-Erik. Tension spring device. 3,817,507, Cl. 267-74.000.

Desai, Prakash Khirubhai; and Spachner, Sheldon Arthur, to Gulf & Western Industries, Inc. Press and drive mecahnism therefor. 3,817,139, Cl. 83-617.000.

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DeWalker, Rober D.; and Howe, Blair E., to California Injection Molding Co., Inc. Molding articles containing inserts. 3,817,402, Cl. 214-1.0bt.

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Dewitte, Maurice J.; and Wojciechowski, Gerald L., to GTE Automatic Electric Laboratories Incorporated. Remote sensing voltage clamping circuit. 3,818,274, Cl. 317-31.000.

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Diamond, Arthur S.; and Usedom, Charles J., to Diamond Research Corporation. Copier test sheet. 3,817,103, Cl. 73-356.000.

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Dickopp, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Radiation transducer system with collimated beam readout of lens modulation elements. 3,818,148, Cl. 179-100.40r.

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Diecomp, Inc.: *See—*
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Dillinger, Roy R. Precision hole spotting tool. 3,816,933, Cl. 33-189.000.

DiMarco, Carlo. Anti-theft device for automotive vehicles. 3,818,437, Cl. 340-65.000.

Dimensional Systems Inc.: *See—*
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Dobbins, Edward C. Curling game. 3,817,529, Cl. 273-126.00r.

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Doherty, George O. P., to Lilly, Eli, and Company. 1H-imidazo(4,5-beta)pyridine derivatives. 3,818,022, Cl. 260-296.00h.

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Doi, Toshio: *See—*
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Dorfman, Bertrand; and Lizzio, N. John, to Codata Corporation. Multiple address direct coupled communication and control current carrier system. 3,818,481, Cl. 340-310.00r.

Dorgebray, Gerard, to Elf-Union S.A. Method and device for detecting and locating leaks in buried pipelines. 3,817,086, Cl. 73-40.50r.

Doss, Joseph H. Anti-air pollution system for internal combustion engine. 3,817,223, Cl. 123-32.0sp.

Dotsko, Martin, to Singer Company, The. Glass cleaning apparatus. 3,816,868, Cl. 15-4.000.

Doughty, Rubert H. Golf putting device. 3,817,535, Cl. 273-180.000.

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Eckerdt, George H., to Korton Sciences Incorporated. Drum drive. 3,817,494, Cl. 254-187.000.

Eckerman, Gunter; and Ludwig, Heinz-Georg, to Kiepe Electric AG. Drive system for an automatic road network with passively guided vehicles. 3,817,185, Cl. 104-152.000.

Eckmar, Lehari: *See—*
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Edelman, Alfred E.; and Laplante, Lionel J., to Vicon Products Corporation. Extensible-retractable helically coiled fiber optic assembly. 3,817,595, Cl. 350-96.00b.

Edenhold, Bert Erik, to Johansson, C. A., AB. Coordinate measuring machine. 3,816,930, Cl. 33-174.0ta.

Edgerton, Nelson W., to Amerace Esna Corporation. High voltage fuse enclosure. 3,818,407, Cl. 337-199.000.

Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, to Telefonaktiebolaget LM Ericsson. Device for production of switching order information for transmission of PCM words. 3,818,142, Cl. 179-15.0at.

Edwards, Alun, to Neill, James Holdings Limited. Permanent magnet devices. 3,818,399, Cl. 335-295.000.

Edwards, Bryant, to Illinois Tool Works, Inc. Sanitary container and lid construction. 3,817,417, Cl. 215-232.000.

Edwards, Philip Neil, to Imperial Chemical Industries Limited. Bisdiguanide salts. 3,818,076, Cl. 260-501.110.

Eger, Mathias. Collapsible tow bar. 3,817,558, Cl. 280-491.00d.

Eggleton, Reginald C.; and Weidner, Albert W., to Interscience Research Institute. Rotating probe high data acquistion rate apparatus. 3,817,089, Cl. 73-67.80s.

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Egusa, Tomoyoshi; and Nakagami, Ichiro, to Toyo Bearing Manufacturing Company. Apparatus applied to machine tools and others for transfering workpieces. 3,817,008, Cl. 51-215.0hm.

Ehrens, Henry; and Slocum, Charles W., to Sealed Unit Parts Co., Inc. Universal clamping device for tubing of different diameters. 3,817,270, Cl. 137-318.000.

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Eisenhardt, Fred W., to Alloway Manufacturing, Inc. Connector. 3,817,642, Cl. 403-385.000.

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Ellero, Charles J. Power vehicle drawn container transporting device. 3,817,577, Cl. 298-5.000.

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Ellis, John Ernest: *See—*
Carrotte, Frederick Henry; and Ellis, John Ernest, 3,817,060.

Ellis, John R. B.; and Franklin, Frederick C., to Chevron Research Company. Gasification of solid carbonaceous waste material. 3,817,724, Cl. 48-209.000.

Ellison, James T., to Sperry Rand Corporation. Binary bypassable arithmetic linear module. 3,818,202, Cl. 235-156.000.

Ellman, George L.: *See—*
Hegeman, George D.; and Ellman, George L., 3,817,830.
Hegeman, George D.; and Ellman, George L., 3,817,833.

Elm, Donald C.: *See—*
Grivna, Howard W.; and Elm, Donald C., 3,816,998.

Elnicki, Walter Joseph: *See—*
Cavallero, Louis Thomas; and Elnicki, Walter Joseph, 3,817,687.

Elphick, Frederick George Humphrey: *See—*
Newton, George Charles; Westlake, Alfred Luigi; and Elphick, Frederick George Humphrey, 3,817,537.

Elson, Reginald Arnold. Implantable prosthetic knee joint. 3,816,853, Cl. 3-1.000.

Elwell, Richard C., to General Electric Company. Compact tilting pad thrust bearing. 3,817,586, Cl. 308-160.000.

Emanuel, George, to TRW Inc. Chain reaction HCl chemical laser. 3,818,374, Cl. 331-94.500.

Emanuel, Nikolai Markovich: *See—*
Balepin, Alexandr Alexeevich; Bobolev, Alexandr Vasilievich; Buslaev, Jury Alexandrovich; Chagin, Vladimir Ivanovich; Emanuel, Nikolai Markovich; and Sergeev, Andrei Ivanovich, 3,818,051.

Embree, Milton Luther: *See—*
Beadle, William Edgar; Embree, Milton Luther; McAfee, Larry Gene; and Moyer, Stanley Floyd, 3,817,794.

Emery, Manning; and Vacchiano, Ronald L. Machines for stripping insulation from cables. 3,817,132, Cl. 83-105.000.

Emhart Corporation: *See—*
Williams, Merton S., 3,817,063.

Emhert Corporation: *See—*
Water, William H., 3,818,127.

EMI Limited: *See—*
Newton, George Charles; Westlake, Alfred Luigi; and Elphick, Frederick George Humphrey, 3,817,537.

Emmel, Ludwig: *See—*
Goebel, Helmut; Horlein, Gerhard; and Emmel, Ludwig, 3,818,073.

Emmerich, Werner S., to Westinghouse Electric Corporation. Contacts for vacuum interrupter of small outside diameter. 3,818,166, Cl. 200-144.00b.

Emmett, John Colin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,818,097.

Emmons, Lawrence D., to Ampex Corporation. Fiber optic cathode ray tube with anti-static discharge means. 3,818,131, Cl. 178-7.850.

Endo, Kunio: *See—*
Wakamatsu, Hisato; and Endo, Kunio, 3,817,226.

Endo, Tatus: *See—*
Sato, Ryozi; Chino, Yasuyoshi; and Endo, Tatus, 3,818,079.

Energy Development Association, mesne: *See—*
Berman, Alby M., 3,818,292.

English Clays Lovering Pochin & Company Limited: *See—*
Clark, Norman Owen, 3,817,457.

English Electric Company Limited, The: *See—*
Robinson, Alfred Alexander, 3,818,163.

Ennis, George Thomas. Vehicle overhead washing apparatus. 3,816,869, Cl. 15-21.00d.

Envirotech Corporation, mesne: *See—*
Marks, Robert E., 3,817,824.

Epstein, Barry M., to Action Communication Systems, Inc. Communications processor system having time shared control devices and dialers. 3,818,449, Cl. 340-147.0cn.

Equini, Arrigo. System and process for picturing the original appearance of an archaeological finding. 3,817,614, Cl. 353-121.000.

Erickson, Donald G., to Jacobsen Manufacturing Company. Lawn mower handle mounting. 3,817,547, Cl. 280-47.370.

Erickson, John W.; and Budrys, Vitolis, to Kobe, Inc. Pitot pump with centrifugal separator. 3,817,446, Cl. 233-2.000.

Erickson, John W.; Brown, Francis Barton; and Petrie, Harold L., to Kobe, Inc. Pitot pump with jet pump charging system. 3,817,659, Cl. 417-84.000.

Erickson, Leland E., to Triple J., Inc. Releasable stirrup. 3,816,974, Cl. 54-49.000.

Eriksson, Ivar, to Malte Manson AB. Series A.C. commutator motor with stabilized speed. 3,818,298, Cl. 318-332.000.

Erk, Adil; and Bohn, Lutz, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Device for transmitting electrical energy. 3,818,152, Cl. 191-45.000.

Ernow, Sture Axel, to Svenska Tobaks Aktiebolaget. Method of producing cigarettes or the like filled with tobacco containing one or more aromatic liquid agents, and a device for carrying out the method. 3,817,258, Cl. 131-31.000.

Ernst, Franklin Henry, Jr.: *See—*
Ernst, Franklin Henry, Jr.; and Travaglio, Dalny (said Travaglio assor. to said), 3,817,171.

Ernst, Franklin Henry, Jr.; and Travaglio, Dalny, said Travaglio assor. to said Ernst, Franklin Henry, Jr. Selective imprinting machine. 3,817,171, Cl. 101-19.000.

Erwin, Curtis L., Jr. Fuel system for diesel engines. 3,817,273, Cl. 137-338.000.

Esaki, Motoharu, to Nippondenso Co., Ltd. Electronic digital clock. 3,817,020, Cl. 58-23.00r.

Escher Wyss G.m.b.H.: *See—*
Holik, Herbert; and Muehle, Erwin, 3,816,941.

Eschger, Philippe Hubin: *See—*
Mace, Jacques; and Eschger, Philippe Hubin, 3,817,965.

Espinasse, Roger, to Schlumberger Technology Corporation. Well logging pad having a flexible electrode structure. 3,818,324, Cl. 324-10.000.

Essers, Wilhelmus Gerardus; and Jelmorini, Gerardus, to U.S. Philips Corporation. Welding torch. 3,818,175, Cl. 219-121.00p.

Esso Research and Engineering Company: *See—*
Coopersmith, Myron; Kochenderfer, Wayne N.; and Felty, Lanny G., 3,818,105.
Mason, Ralph B.; and Hamner, Glen P., 3,817,854.
Zielinski, James, 3,818,104.

Estradier, Francois: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francois, 3,817,699.

Estradier, Francoise: *See—*
Bugaut, Andree; and Estradier, Francoise, 3,817,995.

Etablissememts Guilliet: *See—*
Vinh, Louis Andre Duong, 3,817,304.

Ethyl Corporation: *See—*
Niebyski, Leonard M.; Jarema, Chester P.; and Lee, Thomas E., 3,816,952.
Perilstein, Warren L., 3,817,721.

Evangelista, Helen. Collapsible tray with adaptable hook arrangement. 3,817,190, Cl. 108-44.000.

Evans, ARthur J.; and Randolph, Chester J., to Whitlock, Inc. Material level indicator sensor. 3,818,159, Cl. 200-61.210.

Evans, James P. Rapidly adjustable wrench. 3,817,128, Cl. 81-145.000.

Evans, Richard E.; and McKinney, Claude Owen, to Standard Oil Company. Cyclone separation method and apparatus. 3,817,872, Cl. 252-417.000.

Evans, Robert A.: *See—*
Bayless, Frank K.; Brundage, Horace W.; Evans, Robert A.; and Hoover, John W., 3,816,872.

Evans, William Robert; and Zimmerman, Richard Henry, to AMP Incorporated. Electrical connections to conductors having thin film insulation. 3,818,415, Cl. 339-17.00f.

Evans, William Robert, to AMP Incorporated. Electrical contact socket having improved contact spring. 3,818,424, Cl. 339-258.00t.

Fabbrica Italiana Magneti Marelli, S.p.A.: *See—*
Galli, Guido; and Tateo, Vito, 3,818,343.

Fabriques Reunies de Lampes Electriques: *See—*

Deiss, Claude Joseph Charles, 3,817,591.

Facury, Guilherme. Convertible and pilable furniture sets for living rooms. 3,817,573, Cl. 297-125.000.

Fahey, Darryl R., to Phillips Petroleum Company. Preparation of bis(triorganophosphine)di(alkynyl) metal complexes. 3,818,063, Cl. 260-439.00r.

Fahnstrom, Dale E.: *See—*
Hansen, James G.; and Fahnstrom, Dale E., 3,817,191.

Faith, Herman Eldridge, to Dow Chemical Company, The. Substituted-5-(2,4,6-trihalophenoxy-methyl)-2-oxazoline compounds. 3,818,028, Cl. 260-307.00f.

Falckenberg, Richard, to Siemens Aktiengesellschaft. Method of dividing MG-AL spinel substrate wafers coated with semiconductor material and provided with semiconductor components. 3,816,906, Cl. 29-583.000.

Family Products, Inc.: *See—*
Mastrovito, Donald, 3,817,418.

Fantl, Joel: *See—*
Corey, Albert E.; Donermeyer, Donald D.; Fantl, Joel; and Williams, Charles R., 3,817,892.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Gebauer, Wolfgang; Schlee, Richard; and Zirngiebl, Eberhard, 3,817,846.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Goebel, Helmut; Horlein, Gerhard; and Emmel, Ludwig, 3,818,073.

Farley, Earl T.: *See—*
Sutherland, James F.; and Farley, Earl T., 3,818,119.

Farrow, Malcolm, to Wickman Wimet Limited. Milling cutters. 3,816,893, Cl. 29-105.00a.

Fasco Industries, Inc.: *See—*
Hire, Charles John, 3,818,410.

Fauland, Erich: *See—*
Kampe, Wolfgang; Fauland, Erich; Stork, Harald; Juhran, Wolfgang; and Dietmann, Karl, 3,817,981.

Faulkner, Arthur Manthorpe: *See—*
Hilton, John Leslie; and Faulkner, Arthur Manthorpe, 3,818,121.

Fedders Corporation: *See—*
Shadley, Glen W., 3,817,688.

Fegan, Richard M.: *See—*
Jackson, John A.; and Fegan, Richard M., 3,818,214.

Feinberg, Jacob H., to American Can Company. Photopolymerizable epoxy systems containing sulfoxide gelation inhibitors. 3,817,845, Cl. 204-159.110.

Feinberg, Jacob H., to American Can Company. Photopolymerizable epoxy systems containing substituted acyclic amides or substituted ureas as gelation inhibitors. 3,817,850, Cl. 204-159.110.

Feldmuhle Anlagen- und Produktionsgesellschaft mit beschrankter Haftung: *See—*
Barnscheidt, Wolfgang; Sollinger, Hans; and Krautzberger, Franz, 3,817,208.

Felty, Lanny G.: *See—*
Coopersmith, Myron; Kochenderfer, Wayne N.; and Felty, Lanny G., 3,818,105.

Fendel, Kurt: *See—*
Balwe, Thomas; Bauer, Johann; Fendel, Kurt; Kurz, Dieter; and Sabel, Alex, 3,817,959.

Fennema, Claude L.; Brain, Alfred E.; Rosen, Charles A.; and Yarborough, John M., to Stanford Research Institute. Automatic noncontact recognition of coded insignia. 3,818,191, Cl. 235-61.11e.

Ferguson, T. W.: *See—*
Gibbs, Wallace E., 3,817,305.

Ferment, George R.: *See—*
Burns, Kenneth S.; Ferment, George R.; and Waugh, Roger C., 3,818,082.

Ferranti Limited: *See—*
Grundy, David Latham, 3,818,463.

Ferraro, Frank A., to Warner-Lambert Company. Razor with adjustable blade cartridge. 3,816,913, Cl. 30-47.000.

Ferton, Jean-Yves; and Vento, Georges, to Merlin Gerin Societe Anonyme. Bus bar and stationary disconnect contact assembly for draw-out switchgear. 3,818,281, Cl. 317-103.000.

Fessenden, Edward. Navigational computer. 3,816,928, Cl. 33-150.000.

Fiberwoven Corporation: *See—*
Smith, Alexander M., II, 3,817,820.

Fibreboard Corporation: *See—*
Lefebvre, Alfred; Masch, Helmut E. W.; Robert, Louis; and Morse, Hugh B., 3,817,682.

Fielding Plant Design Limited: *See—*
Grant, Gerald William, 3,817,073.

Fields, Ellis K., to Standard Oil Company. Process for preparing aromatic cyclic thiones. 3,818,041, Cl. 260-327.00c.

Filtering Materials Inc.: *See—*
Atwood, Richard W., 3,817,703.

Fina, Louis R.: *See—*
Lambert, Jack L.; and Fina, Louis R., 3,817,860.

Finch, Neville: *See—*
Werner, Lincoln Harvey; and Finch, Neville, 3,818,099.

Finger, Daniel W., to United States of America, Army. Mine fuzes. 3,817,180, Cl. 102-19.200.

Finger, John F., to Sioux Steam Cleaner Corporation. Split discharge system for washing apparatus. 3,817,272, Cl. 137-334.000.

Fingerle, Karl; and Haag, Korb Juergen, to Fortuna-Werke Maschinenfabrik AG. Band knife guiding device. 3,817,142, Cl. 83-820.000.

Fink, Hans-Ferdi; Koerner, Gotz; and Schmidt, Gunter, to Th. Goldschmidt AG. Polishing composition. 3,817,889, Cl. 260-28.000.

Finneman, Tyko K. Line holder. 3,817,471, Cl. 242-85.100.

Finterm S.p.A. Gruppo Finanziario Termico: *See—*
Joannes, Giuseppe, 3,817,685.

Fiorino, Benjamin C., to International Business Machines Corporation. Detection of digital data using integration techniques. 3,818,501, Cl. 360-40.000.

Firman, Carl M., to United Stated of America, Navy. Apparatus for converting teletypewriter signals for use in digital logic circuits. 3,818,134, Cl. 178-26.00r.

Fischer, Harald, to Swarovski-Optik K.G. Foldable binocular field glasses. 3,817,594, Cl. 350-70.000.

Fishburne, Francis B. Vertical press apparatus with remotely controlled distributor. 3,817,298, Cl. 141-80.000.

Fisher, Leonard F. Polysiloxane coating composition. 3,817,769, Cl. 106-289.0sb.

Fisher, Reed Edward, to Bell Telephone Laboratories, Incorporated. Dual interdigital filter for microwave mixer. 3,818,389, Cl. 333-73.00r.

Flasch, John Robert: *See—*
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,817,905.

Flexsteel Industries, Inc: *See—*
Quakenbush, Howard M., 3,816,860.

Flucke, Winfried: *See—*
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FMC Corporation: *See—*
Andresen, William F., Jr., 3,817,157.
Berkowitz, Sidney, 3,818,004.
Horsky, Eugene G., 3,817,803.
Strasser, Jurgen H.; Wood, Philip; Berticevich, Edward N.; and Buchzik, Charles M., 3,817,259.

Foden, Frederick Roger; and O'Mant, Derrick Michael, to Imperial Chemical Industries Limited. Dihydrofuran derivatives. 3,818,048, Cl. 260-343.600.

Foley, Thomas P.: *See—*
Mosciatti, Roger; Foley, Thomas P.; and Buyaskas, John J., 3,817,469.

Folkins, Hillis O., to Union Oil Company of California. Coking of pyrolysis tars. 3,817,853, Cl. 208-50.000.

Fomenko, Sergei M.; Coker, Frank B.; Hauser, Frank W.; Muller, Alex M.; Smith, Remy J.; and Winston, Theodore, to Telautograph Corporation. Facsimile system. 3,818,126, Cl. 178-6.000.

Fontanella, Luigi; and Mariani, Luigi, to Gruppo Lepetit S.p.A. 2,4-Benzoxazepine derivatives. 3,817,987, Cl. 260-239.30b.

Fooks, Michael T. Tube holder. 3,817,426, Cl. 222-105.000.

Ford Motor Company: *See—*
Anderson, Richard D.; Azelborn, Nicolas A.; and Wade, Wallace R., 3,817,100.
Hartmeyer, John J.; and Ott, Errol J., 3,816,963
Hauser, Gotz S.; and Melmoth, Robert B., 3,817,069.
Horvat, Rudolph M.; and Molnar, Alexander, 3,817,571.
Huston, John T.; and Toohey, Raymond F., 3,817,584.
Kitzner, Ernest W.; Rhodes, Alex; and Wolfe, Earl W., 3,817,118.
Knowles, James; and Stockton, Thomas R., 3,817,660.
Ladd, Floyd N.; Peel, Billy J.; and Stacy, Donald G., 3,816,962.
Mistopoulos, Chris, Jr., 3,816,961.
Williams, Charles E., 3,817,093.
Wilson, Raymond W.; and Mckeon, Charles E., 3,817,580.

Foremark Corporation: *See—*
Shirzad, Paul P.; and Reidt, David L., 3,816,867.

Forenade Fabriksverken: *See—*
Lundqvist, Ulf Rolfsson, 3,817,517.

Forgue, Stanley V., to Radio Corporation of America. Targets for television pickup tubes. 3,818,262, Cl. 315-11.000.

FORMSEAL, Beratungs-, Vertriebs-und Herstellungsgesellschaft mbH: *See—*
Donnet, Henri, 3,817,300.

Forster, Denis; and Hershman, Arnold, to Monsanto Company. Production of carboxylic acids. 3,818,060, Cl. 260-413.000.

Forster, Karl-Heinz: *See—*
Heiber, Hartnut; Forster, Karl-Heinz; and Lein, Werner, 3,817,175.

Forster, Rudolf: *See—*
Geissel, August; Lehnert, Richard; and Forster, Rudolf, 3,817,461.

Fortuna-Werke Maschinenfabrik AG: *See—*
Fingerle, Karl; and Haag, Korb Juergen, 3,817,142.

Foster Grant Co., Inc.: *See—*
Bloch, Jack, 3,817,392.

Foster, Wilbur A.: *See—*
Harrison, Wesley V.; and Foster, Wilbur A., 3,818,485.

Fowler, Herbert H., 1/2 to Asher, Elihu C. Digital clock alarm. 3,817,019, Cl. 58-16.500.

Fowler, Raymond L., to International Business Machines Corporation. Collimated light source scanner system. 3,818,132, Cl. 178-7.600.

Foye, Duane F.: *See—*
Hinkamp, Paul E.; and Foye, Duane F., 3,817,780.

Francis, George E. Air-borne particle deflector for vehicle windshields. 3,817,572, Cl. 296-91.000.

Frangos, John W. Convertible floor system. 3,817,015, Cl. 52-511.000.

Frank: *See—*
Weed, Gehres D., 3,817,011.

Franke, Hans G., to Chevron Research Company. 2,4,6-Substituted-3,5-dioxo-1,2,4,6-thiatriazines. 3,817,993, Cl. 260-243.00r.

Frankel, Donald P.; and Kendall, Willard E., to La Mere Industries, Inc. Incinerator. 3,817,193, Cl. 110-9.00r.

Frankfort, Hans R. E.; and Lyons, Peter F., to Du Pont de Nemours, E. I., and Company. Crimped polyester filament yarn and process for making same. 3,816,992, Cl. 57-140.00r.

Frankfurth, Gunther; Wieser, Werner; and Handle, Rainer, to Rieter-Werk Dipl.-Ing. Walter Handle GmbH. Extrusion press for processing viscous materials especially clay or clay-like materials. 3,817,498, Cl. 259-192.000.

Franklin, Chester A.; and Spector, George. Behind mirror focus light gathering device. 3,817,605, Cl. 350-294.000.

Franklin, Frederick C.: *See—*
Ellis, John R. B.; and Franklin, Frederick C., 3,817,724.

Frederick, Cecil S., to Cutters Machine Company, Inc. Winding mechanism for cloth spreading machine. 3,817,513, Cl. 270-31.000.

Frederick, Leonard L. Pile driver drive cap. 3,817,091, Cl. 73-84.000.

Freedman, David Daniel, to RCA Corporation. High-speed logic circuits. 3,818,242, Cl. 307-218.000.

Freiburg, Hans Keller; and Schultz, Wolfgang, to ITT Industries, Inc. Method and apparatus for synchronizing the balance system of clocks or wrist watches. 3,818,376, Cl. 331-116.00m.

Frese, Ralph L.: *See—*
Cuffe, Moses L.; and Frese, Ralph L., 3,817,554.

Fridinger, Tomas L.; Mutsch, Edward L.; and Pauly, David R., to Minnesota Mining and Manufacturing Company. Method for plant growth regulation. 3,817,740, Cl. 71-76.000.

Fried, John H.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,818,040.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,818,042.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Hoke, Bert, 3,817,862.

Frielingsdorf, Hans: *See—*
Mueller-Tamm, Heinz; Frielingsdorf, Hans; Nickl, Johann; and Kolk, Erich, 3,817,969.
Mueller-Tamm, Heinz; Frielingsdorf, Hans; Nickl, Johann; and Kolk, Erich, 3,817,970.

Fries, Bernard A., to Chevron Research Company. Radioactive tracer system to indicate drill bit wear or failure. 3,818,227, Cl. 250-303.000.

Frisch, Erling, to Westinghouse Electric Corporation. Rocket engine. 3,817,029, Cl. 60-203.000.

Frisch, Erling; and Andrews, Harry N., to Westinghouse Electric Corporation. Nuclear reactor internals construction and failed fuel rod detection system. 3,817,829, Cl. 176-19.0ld.

Frisch, Kurt C.: *See—*
Ashida, Kaneyoshi; and Frisch, Kurt C., 3,817,938.

Frost, Lawrence W.; and Lee, Pang-Kai, to Westinghouse Electric Corporation. Reverse osmosis membranes from pyrrone polymer precursons. 3,817,386, Cl. 210-321.000.

Fruengel, Frank. Apparatus for measuring visibility in a fluid. 3,817,623, Cl. 356-103.000.

Fuchs, Hartwig: *See—*
Goelz, Horst; Stockburger, Dieter; Saeuberlich, Manfred; Mueller, Frank; Fuchs, Hartwig; and Von Erden Karl, 3,818,002.

Fuchs, James A.: *See—*
Dowling, Donald J.; Boyd, John F.; and Fuchs, James A., 3,818,323.

Fuji Electric Company Limited: *See—*
Mouri, Mineju; and Aoki, Katsuhiko, 3,818,401.

Fuji Shashin Koki Kabushiki Kaisha: *See—*
Sagara, Iwao; Shishikura, Hirohisa; and Numata, Saburo, 3,818,495.

Fuji Xerox Co., Ltd.: *See—*
Aoke, Masaharu; Odajima, Hiromichi; Segawa, Michi; Ueda, Ken; Fukase, Yasushi; Terajima, Yasuhiko; Yumoto, Hidekazu; and Mizobe, Takahiko, 3,818,185.

Fujimura, Kenichi; and Tanaka, Takashi, to Matsushita Electric Industrial Co. Ltd. Method of making a multi-channel magnetic head. 3,816,908, Cl. 29-603.000.

Fujimura, Yoshio: *See—*
Gomyo, Shiro; Tanaka, Yasuhisa; and Fujimura, Yoshio, 3,817,902.

Fujitsu Limited: *See—*
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Fujiwara, Sigemi: *See—*
Maeda, Kazuya; and Fujiwara, Sigemi, 3,816,882.

Fukase, Yasushi: *See—*
Aoke, Masaharu; Odajima, Hiromichi; Segawa, Michi; Ueda, Ken; Fukase, Yasushi; Terajima, Yasuhiko; Yumoto, Hidekazu; and Mizobe, Takahiko, 3,818,185.

Fukata, Yasuo: *See—*
Nakagome, Yukio; Teramura, Hiroichi; Fukata, Yasuo; Mori, Hiromichi; and Sugita, Shoichi, 3,818,450.

Fukuma, Nobuo: *See—*
Nakamura, Kenya; Fukuma, Nobuo; and Kato, Yoshito, 3,817,125.

Fukumoto, Tetsuo: *See—*
Yamaguchi, Goro; Komatsu, Susumu; Yoshizaki, Kazuhiro; and Fukumoto, Tetsuo, 3,817,726.

Fukushima, Mamoru: *See—*
Isono, Akira; Fukushima, Mamoru; and Hiroyoshi, Hidetaka, 3,818,317.

Fukushima, Osamu; and Sato, Masamichi, to Xerox Corporation. Electrostatographic liquid development apparatus. 3,817,212, Cl. 118-637.000.

Fukutani, Hideo; and Miura, Konoe, to Matsubishi Chemical Industries, Ltd. Photosensitive polymer and composition. 3,817,876, Cl. 260-2.00a.

Fukutomi, Naoki: *See—*
Maeda, Yo; Ueyama, Tamotsu; and Fukutomi, Naoki, 3,816,909.

Fuller, Ronald George. High head solids pumps. 3,817,652, Cl. 415-53.000.

Fulton, Ronald T.; and Roberts, Evan D., to Panduit Corporation. Cable tie. 3,816,878, Cl. 24-16.0pb.

Furse, John H., to Servco Company, The. Underreamer. 3,817,339, Cl. 175-271.000.

Furukawa, Junji; Kobayashi, Eiichi; and Kawagoe, Takahiro, to Bridgestone Tire Company Limited. Method of producing equibinary (cis 1.4-1.2) polybutadiene. 3,817,968, Cl. 260-94.300.

FWI, Inc.: *See—*
Elliott, Robert E., 3,817,278.

Gabbard, Ova G.: *See—*
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; and Maillet, Wilfrid G., 3,818,453.

Gabler, James H.: *See—*
Riley, Robert E.; and Gabler, James H., 3,817,618.

Gaenzler, Wolfgang; and Schroeder, Guenter, to Rohm GmbH. Difficulty inflammable acrylic compositions. 3,817,913, Cl. 260-45.70p.

Gaeth, Rudolf: *See—*
Stastny, Fritz; Gaeth, Rudolf; and Ikert, Boris, 3,818,086.

GAF Corporation: *See—*
Baldwin, Arnold Victor; and Johnson, Walter, Jr., 3,817,564.
Copes, Joseph P.; and Lorenz, Donald H., 3,817,745.
Mackey, E. Scudder; Papp, Richard J.; and Waring, James, 3,817,755.
Mestetsky, Thomas S., 3,817,887.
Strobel, Albert F.; and Whitehouse, Maynard L., 3,817,990.

Gagle, Duane W.; and Draper, Homer L., to Phillips Petroleum Company. Low temperature resilient composition having sealant and caulking utilities. 3,817,904, Cl. 260-33.6aq.

Galli, Guido; and Tateo, Vito, to Fabbrica Italiana Magneti Marelli, S.p.A. Electronic device for speed signalling in a D.C. motor. 3,818,343, Cl. 324-177.000.

Gallini, John B., to Du Pont de Nemours, E. I., and Company. Laminar packaging film. 3,817,821, Cl. 161-165.000.

Gamble, Peter Charles David; and Marsh, John, to Davy-Ashmore Limited. Method of continuously casting metal. 3,817,313, Cl. 164-83.000.

Ganellin, Charon Robin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,818,097.

Ganz, Ernest D., to National Components Industries, Inc. Anode for solid electrolyte capacitor. 3,818,286, Cl. 317-230.000.

Gardiner, Donald A.: *See—*
Davis, Otho; and Gardiner, Donald A., 3,816,946.

Garner, Paul Johnson, to Imperial Chemical Industries Limited. Method of fabricating an impregnated porous metal mould. 3,816,903, Cl. 29-527.200.

Garrett, Elmer E. Magnetic tape device with flexible head mounting and moving means. 3,818,505, Cl. 360-101.000.

Garth, Bruce Hollis: *See—*
Carlson, Norman Arthur; and Garth, Bruce Hollis, 3,817,971.

Garvey, Francis J. Combination sport seat and walking stick. 3,817,483, Cl. 248-155.000.

Gaston-Breton, Hubert: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Gaston-Breton, Hubert, 3,817,698.

Gates Rubber Company, The: *See—*
Stark, Robert E.; and Grossman, Phillip A., 3,817,789.

Gatter, Adelaide L., to Pure Co., Inc., The. Container. 3,817,371, Cl. 206-.500.

Gausz, Henry: *See—*
Grausz, Henry, 3,817,241.

Gawlick, Heinz: *See—*
Bendler, Hellmut; Gawlick, Heinz; and Marondel, Gunther, 3,817,263.

Geary, Carl H.: *See—*
Huesgen, Eugene L.; and Geary, Carl H., 3,817,655.

Gebauer, Wolfgang; Schlee, Richard; deceased (by Babette, named Schlee, Barbara; heir); and Zirngiebl, Eberhard, to Farbenfabriken Bayer Aktiengesellschaft. Control of anode spacing in alkali metal chloride electrolytic cells. 3,817,846, Cl. 204-99.000.

Gebr. Winkelstrater GmbH: *See—*
Winkelstrater, Claus; Burgener, Horst; and Hubrich, Christoph, 3,817,667.

Gebruder Netzsch, Maschinenfabrik: *See—*
Geissel, August; Lehnert, Richard; and Forster, Rudolf, 3,817,461.

Geffroy, Francoise, born Remy: *See—*
Thuillier, Germaine, born Nachmias; and Geffroy, Francoise, born Remy, 3,818,021.

Geiger, Friedrich, to Daimler-Benz Aktiengesellschaft. Bumper for motor vehicles. 3,817,565, Cl. 293-63.000.

Geissel, August; Lehnert, Richard; and Forster, Rudolf, to Gebruder Netzsch, Maschinenfabrik. Agitator mill. 3,817,461, Cl. 241-73.000.

Geiszler, Adolph Oscar: *See—*
Von Esch, Anne Mary; and Geiszler, Adolph Oscar, 3,818,103.

General Crane Industries Limited: *See—*
Wellman, Donald Edward, 3,817,397.

General Electric Company: *See—*
Brezosky, Bernard J., 3,817,590.
Chun, Myung K.; and Bischoff, John T., 3,818,373.
Elwell, Richard C., 3,817,586.
Greer, David L., 3,818,452.
Guichard, Robert Charles, 3,818,392.
Harnden John D., Jr., 3,818,411.
Klein, Keith W., 3,818,406.
Lemmers, Eugene, 3,817,296.
Mitoff, Stephan P., 3,817,790.
Pauze, Denis R.; and Holub, Fred F., 3,817,926.
Ringwall, Carl Gustave, 3,817,480.
Rochford, Celia A.; and Rochford, Paul E., 3,818,212.
Rochford, Paul E.; and Rochford, Celia A., 3,818,213.
Weber, Kurt H., 3,817,683.
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General Motors Corporation: *See—*
Bowler, Lauren L.; and Johnston, Laird E., 3,817,585.
Brumm, Karl; and Thaler, Konrad, 3,817,220.
Bubniak, William C.; Huellmantel, Louis W.; and Mitchell, Harry R., 3,817,099.
Harper, Ernest V.; and Yasenchak, Richard W., 3,818,290.
Knight, John W., IV; Libkie, Herbert A.; Parr, Ben C.; and Savage, Carl M., Jr., 3,817,552.

General Refractories Company: *See—*
Dunworth, Bruce E.; and Bakker, Wate T., 3,817,770.

General Signal Corporation: *See—*
Smith, Willis R.; and Kure, Leonard J., 3,818,280.

General Steel Industries, Inc.: *See—*
Lich, Richard L., 3,817,188.

General Switch Company: *See—*
Norden, Alexander R., 3,818,168.

General Tire & Rubber Company, The: *See—*
Miller, James R., 3,817,443.

General Tire and Rubber Company, The: *See—*
Monajjem, Fred, 3,817,003.

Georgieff, Stephen K., to UMC Industries, Inc. Follower positioning and indexing cam for roller gear drive and method of use. 3,817,116, Cl. 74-426.000.

Gerbruder Seidel KG: *See—*
Ritzenhoff, Hermann, 3,817,636.

Gerhart, Fritz: *See—*
Schoellkopf, Ulrich; Gerhart, Fritz; Hoppe, Dieter; and Jentsch, Reinhard, 3,818,065.

Gersing, Eberhard, to Braun Aktiengesellschaft. Start device for battery igniter. 3,818,277, Cl. 317-79.000.

Gevaert, Lieven H.: *See—*
Steele, Barbara A.; and Gevaert, Lieven H., 3,817,729.

Gfeller, Ernst Alfred, to Singeisen, Markus. Linear measuring device. 3,816,926, Cl. 33-141.00r.

Ghovanloo, Massud Karim. Suspended target and profectile. 3,817,527, Cl. 273-101.000.

Gibbs, Wallace E., 1/3 each to Ferguson, T. W. and McNaughton, J. W. Cutter tip. 3,817,305, Cl. 144-231.000.

Gibilisco, Paul J.: *See—*
Lafferty, James H.; Reiter, Raymond A.; and Gibilisco, Paul J., 3,817,503.

Gibson, Gerald Warren; Sigmon, Ned A.; and Kirby, Ransom Pitts, to Liggett & Myers Incorporated. Device for detecting carbon on cigarette filter tips. 3,818,223, Cl. 250-223.00r.

Gibson, Robert C.: *See—*
Kowal, Leonard J.; and Gibson, Robert C., 3,817,302.

Gikow, Emanuel; and Vig, John R., to United States of America, Army. Superconductive tunable filter with narrow band and broad tuning range. 3,818,390, Cl. 334-68.000.

Gilberto, Matthew J., to Chicago Hydraulics Inc. Recycling method and apparatus. 3,817,458, Cl. 241-20.000.

Gillette Company, The: *See—*
Samsing, Rolf A., 3,817,373.
Sastri, Aiyaswami Suryanarayan, 3,816,920.

Gilmore, Oscar P., to Collins, S. J. Four-high roll casting machine. 3,817,317, Cl. 164-277.000.

Girling Limited: *See—*
Blakey, Roy, 3,817,583.
Hess, Wolfgang, 3,817,358.

Glaberson, Martin, to Warner-Lambert Company. Razor with adjustable blade cartridge. 3,816,912, Cl. 30-47.000.

Glachet, Charles; Guilbaud, Jean-Pierre; and Vertut, Jean, to Commissariat a l'Energie Atomique. Remote manipulator. 3,817,403, Cl. 214-1.0cm.

Gladding, Edward Karcher, to Du Pont de Nemours, E. I., and Company. Thermoplastic elastomeric compositions. 3,817,893, Cl. 260-28.tav.

Glotin, Philippe: *See—*
Bernard, Jean; Borel, Joseph; Glotin, Philippe; and Lacour, Jacques, 3,816,905.

Glukhov, Vasily Pavlovich; Maiorov, Valery Andreevich; and Sviridov, Alexandr Alexandrovich. Device for induction starting a synchronous motor and pulling it into synchronism. 3,818,294, Cl. 318-174.000.

Glynn, Emmett P.: *See—*
Principe, Andrew H.; and Glynn, Emmett P., 3,817,108.

Goebel, Brownell Wesley: *See—*
Helmick, James William; Goebel, Brownell Wesley; and Current, John Marvin, 3,817,804.

Goebel, Helmut; Horlein, Gerhard; and Emmel, Ludwig, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Insecticidal agents. 3,818,073, Cl. 260-482.00c.

Goeke, Alfons, to Kieserling, Th., & Albrecht. Apparatus for moving cutters in machines for shaving metallic rod stock. 3,817,130, Cl. 82-20.000.

Goelz, Horst; Stockburger, Dieter; Saeuberlich, Manfred; Mueller, Frank; Fuchs, Hartwig; and Von Erden Karl, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of dry sodium dichloroisocyanurate. 3,818,002, Cl. 260-248.00c.

Golaski, Frank W.; and Telega, Thomas J., to Westinghouse Electric Corporation. Tap-changing series-multiple transformer system. 3,818,402, Cl. 336-147.000.

Golborn, Peter, to Hooker Chemical Corporation. Process for imparting flame retardancy to a textile. 3,817,779, Cl. 117-136.000.

Goldstein, Mark. Collapsible reel. 3,817,475, Cl. 242-115.000.

Goltner, Wolfgang; Hohmann, Wolfgang; and Ruthardt, Rolf, to Heraeus, W. C., GmbH. Synthetic fiber spinning plate with columnar coating layer. 3,817,680, Cl. 425-461.000.

Gombert, Marcel: *See—*
Leroy, Pierre; Gombert, Marcel; and Sprunck, Emile, 3,817,744.

Gomyo, Shiro; Tanaka, Yasuhisa; and Fujimura, Yoshio, to Shinetsu Chemical Company. Silicone resin compositions. 3,817,902, Cl. 260-32.8sb.

Gonda, Tsunemi, to Nippon Kogaku K.K. Voltage-power booster for an operational amplifier. 3,818,361, Cl. 330-22.000.

Gonser, Donald I., to Dentsply International Inc. Passive electrode and clamp therefor. 3,817,253, Cl. 128-418.000.

Gontowski, Walter S., Jr.: *See—*
Anselmo, Robert A.; and Gontowski, Walter S., Jr., 3,818,462.

Good, Arthur L., to Reese Products, Inc. Locking device for securing a pivotal member to one end of an arm member. 3,817,639, Cl. 403-122.000.

Goodrich, B. F., Company, The: *See—*
Sidles, James, 3,817,306.

Goodyear Tire & Rubber Company, The: *See—*
Hahn, Maneung; and Okuzumi, Yuzi, 3,817,934.
Parks, Carl R., 3,817,916.

Gopal, Raj; and Weiss, Harald H., to Westinghouse Electric Corporation. N-16 nuclear reactor coolant flow rate measuring system. 3,818,231, Cl. 250-356.000.

Gordon, Mack; and Phillippi, John F., to Aerodyne Development Corporation. Method and apparatus for bag collection of dirt. 3,816,977, Cl. 55-96.000.

Gorman, Susan B., to De Soto, Inc. Polymerization of 9-vinyl carbazole. 3,817,961, Cl. 260-88.30r.

Goto, Hiroshi: *See—*
Arimura, Ichiro; Goto, Hiroshi; Matsushima, Hiroshi; and Nakao, Yoshikazu, 3,818,366.

Goto, Kenji; and Mizuno, Kiyohiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Overheat protection for catalyst converter. 3,817,031, Cl. 60-288.000.

Gotoh, Masanori; Hirano, Tadao; Toda, Sadasuke; Okugawa, Katuo; and Monden, Kazutaka, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for preventing a motorcar from being driven by a drunk driver. 3,818,434, Cl. 340-53.000.

Gotz, Hans: *See—*
Wilfert, Karl; and Gotz, Hans, 3,818,211.

Grabher, Erich; Donhauser, Anton; and Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Holder mechanism equipped with a tool holder retained therein. 3,817,541, Cl. 279-1.00r.

Grable, Donovan B.; and Laney, Bill C., to Hydro-Combo, Inc. Subsurface well blowout preventer operated mechanically from the surface. 3,817,327, Cl. 166-72.000.

Grace, James M.: *See—*
Bourgeois, Joseph F.; and Grace, James M., 3,817,352.

Graff, Kenneth W., to ICI America Inc. Surfactants for solvent/water systems and textile treating compositions. 3,817,871, Cl. 252-312.000.

Graham, Craig E.: *See—*
Butler, Anthony J.; Graham, Craig E.; and Musolf, Martin C., 3,817,894.

Granberry, Doyle S., to Texas Instruments, Incorporated. Solid state modular microwave system. 3,818,386, Cl. 333-33.000.

Grannen, Edward A., to Occidental Petroleum Corporation. Amine flotation reagents. 3,817,972, Cl. 260-97.500.

Grant, Gerald William, to Fielding Plant Design Limited. Hydraulic extrusion presses. 3,817,073, Cl. 72-263.000.

Grantham, LeRoy F., to Rockwell International Corporation. Muffler device. 3,817,715, Cl. 23-288.00f.

Graphs Techni-Services, Inc.: *See—*
Greason, Craig P., 3,817,445.

Grassmayr, Klaus: *See—*
Bretschneider, Hermann; Grassmayr, Klaus; Hohenlohe-Oehringen, Kraft; and Grussner, Andre, 3,818,027.

Grausz, Carol; as trustees for Grausz, Bradley: *See*—
Grausz, Henry, 3,817,241.

Grausz, Carol; as trustees for Grausz, Micheal L.: *See*—
Grausz, Henry, 3,817,241.

Grausz, Henry: *See*—
Grausz, Henry, 3,817,241.

Grausz, Henry, 10% to Grausz, Henry, Grausz, Carol; as trustees for Grausz, Micheal L., 10% to Gausz, Henry, Grausz, Carol; as trustees for Grausz, Bradley and 10% to Braun, Edgar. Disposable central venous catheter and method of use. 3,817,241, Cl. 128-2.6e.

Gray, Zane P. Portable sportsman seat. 3,817,350, Cl. 182-187.000.

Grayhill, Inc.: *See*—
Kobernus, William D., 3,818,169.

Greason, Craig P., to Graphs Techni-Services, Inc. Expandable mailing envelope assembly. 3,817,445, Cl. 229-70.000.

Greatbatch, Wilson; and Mead, Ralph T., to Greatbatch, Wilson, Ltd. Lithium iodine battery. 3,817,791, Cl. 136-83.00r.

Greatbatch, Wilson, Ltd.: *See*—
Greatbatch, Wilson; and Mead, Ralph T., 3,817,791.

Green, Norman; McGill, Robert L., Jr.; and Vergara, William C., to Bendix Corporation, The. Digitally controlled phase shifter. 3,817,582, Cl. 307-262.000.

Green, Norman; and Vergara, William C., to Bendix Corporation, The. Telephone line receiver and transmitter. 3,818,140, Cl. 179-2.00c.

Greenberger, Joseph Irwin; and Ciochetto, Joseph James, to Wean United, Inc. Vessel handling apparatus for continuous casting machine. 3,817,318, Cl. 164-281.000.

Greene, Clarence Kirk. Hydraulic drive for trucks, trailers and truck-trailer combinations. 3,817,341, Cl. 180-14.00d.

Greer, David L., to General Electric Company. Electrically programmable logic circuits. 3,818,452, Cl. 340-166.00r.

Greever, James E., to Carrier Corporation. Apparatus for coating the interior end portion of a tube joint. 3,817,210, Cl. 118-408.000.

Gringras, Michel, to Compagnie de Saint-Gobain. Granular free-flowing material for use in the manufacture of glass. 3,817,776, Cl. 117-100.00s.

Grisar, Johann M.; and Janssens, Willhelmus, to Richardson-Merrell Inc. Alkyl substituted-benzoylacetates antilipemic agents. 3,818,072, Cl. 260-476.00r.

Grislis, Viktor Yanovich: *See*—
Pastors, Juris Avgustovich; Litsitis, Andrei Andreevich; and Grislis, Viktor Yanovich, 3,818,409.

Grivna, Howard W.; and Elm, Donald C., to Timesavers, Inc. Method of and apparatus for rapidly abrading metal workpieces. 3,816,998, Cl. 51-145.00t.

Groebke, Wolfgang, to Sandoz Ltd. Substituted phenyl azo naphthyl disperse dyes. 3,817,977, Cl. 260-196.000.

Groechel, William D.: *See*—
Neff, Robert O.; Morrison, Kenneth V.; and Groechel, William D., 3,817,427.

Groenenbroom, Maarten; and Lisser, Jacques, to Smit Nijmegen Electrotechnische Fabrieken N.V. Method of and apparatus for improving the linearity of the current transformation of a DC measuring transductor. 3,818,337, Cl. 324-127.000.

Groginsky, Herbert L., to Raytheon Company. Coded navigation system. 3,818,478, Cl. 343-106.00r.

Grolet, Pierre: *See*—
Reynard, Remi; and Grolet, Pierre, 3,817,466.

Grossman, Phillip A.: *See*—
Stark, Robert E.; and Grossman, Phillip A., 3,817,789.

Grossmann, Gunter; Huber, Josef; Moder, Hans-Ulrich; Schaffer, Bernhard; Lenz, Ulrich; Petersen, Joachim; and Rabold, Jurgen. Method and apparatus for processing errors in a data processing unit. 3,818,199, Cl. 235-153.0ak.

Grundig Elektro-Mechanische Versuchsanstalt Max Grundig: *See*—
Schroeder, Erich, 3,818,504.

Grundy, David Latham; to Ferranti Limited. Semiconductor information storage devices. 3,818,463, Cl. 340-173.0ca.

Gruppo Lepetit S.p.A.: *See*—
Cricchio, Renato, 3,817,986.
Fontanella, Luigi; and Mariani, Luigi, 3,817,987.

Grussner, Andre: *See*—
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Gryctko, Carl E.: *See*—
Buxton, Aldon L.; Donnerstag, Leonard; and Gryctko, Carl E., 3,818,282.

G.T. Schjeldahl Company: *See*—
Luetzow, Edwin Jerome, 3,818,122.

GTE Automatic Electric Laboratories Incorporated: *See*—
Brenski, Edwin F.; Draayer, Jan; Reynolds, Nigel J. E.; Rice, Verner K.; Schulte, Donald L.; Wedmore, William R.; Wilber, John A.; Buhrke, Rolfe E.; and Van Bosse, John G., 3,818,455.
Christenson, Gerald A., 3,818,367.
Dewitte, Maurice J.; and Wojciechowski, Gerald L., 3,818,274.
Reimer, William A., 3,818,416.
Vrba, James J.; and Buedel, Charles K., 3,818,143.

GTI Corporation, mesne: *See*—
Bennett, Kenneth R.; and Crownover, Joseph W., 3,818,118.

Gudin, Claude; and Peel, Eric, to British Petroleum Company Limited, The. Method for growing plants. 3,816,960, Cl. 47-58.000.

Guertin, Robert W., to Dover Corporation. Quick disconnect swivel coupling. 3,817,560, Cl. 285-90.000.

Guest, George W., to Sprague & Henwood, Incorporated. Heavy duty soil sampler. 3,817,338, Cl. 175-239.000.

Guichard, Robert Charles, to General Electric Company. Ampere rated reed switch. 3,818,392, Cl. 335-154.000.

Guilbaud, Jean-Pierre: *See*—
Glachet, Charles; Guilbaud, Jean-Pierre; and Vertut, Jean, 3,817,403.

Guinosso, Charles J.: *See*—
Teller, Daniel M.; Guinosso, Charles J.; Bell, Stanley C.; and Douglas, George H., 3,817,994.

Gulf & Western Industries, Inc.: *See*—
Desai, Prakash Khirubhai; and Spachner, Sheldon Arthur, 3,817,139.

Gulf Resources & Chemical Corporation: *See*—
Kamienski, Conrad W.; and Merkley, Joseph H., 3,817,955.

Gunnebo Bruks Aktiengesellschaft: *See*—
Larsson, Sven Gunnar Olof, 3,816,951.

Gunnerman, Rudy M. Heat barrier composition. 3,817,925, Cl. 252-62.000.

Gunson's Sortex Limited: *See*—
Maytum, Derek Laurie, 3,817,168.

Guth, Hans; Eberlein, Richard; Wiechers, Herbert; and Zirngiebl, Eberhard, to Bayer Aktiengesellschaft. Reconcentrating spent alkali metal chloride solution for recycling to electrolysis cell. 3,817,847, Cl. 204-99.000.

Gutman, William B.: *See*—
Anderson, Elmer C.; Dow, John, Jr.; Gutman, William B.; and Oetting, William A., 3,818,192.

Guzy, Raymond L., to Borg-Warner Corporation. Rubber composition. 3,817,908, Cl. 260-37.0ep.

Gyugyi, Laszlo; Pelly, Brian R.; and Stacey, Eric J., to Westinghouse Electric Corporation. Electrical converter apparatus having an integrating type control means for determining firing points and an end stop firing pulse control means. 3,818,315, Cl. 32169.00r.

Ha, In W.; and Sordello, Frank J., to Xerox Corporation. Motor control apparatus. 3,818,297, Cl. 318-331.000.

Haag, Franz; and Locher, Otto, to Motan Gesellschaft mit beschrankter Haftung. Oscillating burner device. 3,817,681, Cl. 431-1.000.

Haag, Korb Juergen: *See*—
Fingerle, Karl; and Haag, Korb Juergen, 3,817,142.

Haase, Charles A. Single-drum conveyor belt. 3,817,355, Cl. 186-1.00a.

Haataja, Paavo: *See*—
Kantola, Mikko; Haataja, Paavo; and Saarinen, Pentti, 3,817,303.

Habermeier, Hans K., to Pee Dee Pathology Associates, P.A. Measuring apparatus. 3,816,923, Cl. 33-1.0bb.

Habfast, Karleugen; and Heinen, Gerhard, to Varian Mat Gesellschaft mit beschrankter Haftung. Thermal stabilization device using a temperature sensing device and an electrical heating means especially for field probes for measuring magnetic field strength n sectoral field mass spectometers. 3,818,184, Cl. 219-504.000.

Hackler, Ronald E.: *See*—
Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,818,009.

Hadida, Roger, to Societe Ben Societe Anonyme. Voltage integrating apparatus. 3,818,204, Cl. 235-183.000.

Haff, William B. Adjustable harness for ski boot. 3,817,543, Cl. 280-11.35c.

Hafner, Wolfgang: *See*—
Kiffe, Horst-Gregor; Scheller, Paul; and Hafner, Wolfgang, 3,816,929.

Hagen, Dean C. Apparatus for ornamenting walls and ceilings. 3,817,178, Cl. 101-379.000.

Hagen, Helmut; and Becke, Friedrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of benzoxetane-2-spiro-2-(1,3-diazocycloalkanes). 3,818,036, Cl. 260-309.700.

Hagen, James P.: *See*—
Lefevre, Clyde E.; Hagen, James P.; and Owens, Ben H., 3,817,754.

Hagiz, Gil. Overload interrupt systems for three-phase induction motor. 3,818,270, Cl. 317-13.00r.

Hahn, Do Won, to Ortho Pharmaceutical Corporation. Method of inducing infertility and preventing littering in the female. 3,818,093, Cl. 424-270.000.

Hahn, Inc.: *See*—
Sorenson, Charles E.; Stubblefield, Clyde D.; Debaillie, Arnold A.; Bramley, Robert K.; and Bourassa, Hugh A., 3,816,985.

Hahn, Maneung; and Okuzumi, Yuzi, to Goodyear Tire & Rubber Company, The. Sulfodicarboxylic acid-caprolactam reaction product modified polyesters. 3,817,934, Cl. 260-75.00n.

Hainaut, Daniel; Toromanoff, Edmond; and Demoute, Jean-Pierre, to Roussel Uclaf. Preparation of tridecatrienoic acid derivatives. 3,818,059, Cl. 260-410.90r.

Hait, Paul W.: *See*—
Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., 3,817,610.

Hakansson, Sven Anders Samuel, to Kommanditbolaget United Stirling. Valve control means for changing working space volume in stirling cycle engine. 3,817,035, Cl. 60-521.000.

Hakansson, Sven Anders Samuel, to Kommanditbolaget United Stirling (Sweden). Arcuate shaped heat transfer pipes. 3,817,036, Cl. 60-526.000.

Halberschmidt, Friedrich; Linberg, Karl-Heinz; Roentgen, Paul; and Steffens, Hans, to Saint-Gobain Industries. Autoclave for glass laminates. 3,817,811, Cl. 156-382.000.

Hall, John S.: *See*—
Butts, Ernest O.; and Hall, John S., 3,818,083.

Hall, Thomas R., to Altec Manufacturing Company, Inc. Aerial lift mechanism. 3,817,007, Cl. 52-115.000.

Halt, Hermann: *See—*
Nolte, Rudolf, 3,817,523.

Ham, Rowland Herbert. Demountable load carrying bodies. 3,817,413, Cl. 214-515.000.

Hamann, Herman C.: *See—*
Clemens, David H.; and Hamann, Herman C., 3,817,878.

Hambro Structural Systems Limited: *See—*
Butts, Ernest O.; and Hall, John S., 3,818,083.

Hameen-Anttila, Yrjo Sakari. Fish lure. 3,816,953, Cl. 43-35.000.

Hamilton, Billy Harold; Meszar, John Robert; Ostapiak, Roman; Schroeder, Robert Edward; and Untamo, Peter Pentti, to Bell Telephone Laboratories, Incorporated. Serially-connected converters having multiple regulation modes for use in supplying serially-conected loads on long lines. 3,818,307, Cl. 321-11.000.

Hamilton, Mark H., to Rokon, Inc. Motorcycle brakes. 3,817,342, Cl. 180-32.000.

Hamlin, Halley Dale, to MTD Products Inc. Shredder. 3,817,462, Cl. 241-101.700.

Hammann, Ingeborg: *See—*
Regel, Erik; Buchel, Karl Heinz; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,818,029.

Hammond, Philip G.: *See—*
Nissen, Ealter D.; and Hammond, Philip G., 3,817,514.

Hamner, Glen P.: *See—*
Mason, Ralph B.; and Hamner, Glen P., 3,817,854.

Hampton, Robert S., to Lox Equipment Company. Thermal junction for a cryogenic vessel. 3,817,047, Cl. 62-45.000.

Handle, Rainer: *See—*
Frankfurth, Gunther; Wieser, Werner; and Handle, Rainer, 3,817,498.

Hansen, James G.; and Fahnstrom, Dale E., to Source/Inc. Support leg structure for multi-position table. 3,817,191, Cl. 108-79.000.

Hanser, Paul E. Hydraulic jack for trailers. 3,817,493, Cl. 254-86.00r.

Hanson, Delon C., to Hewlett-Packard Company. Microwave amplifier circuit utilizing negative resistance diode. 3,818,365, Cl. 330-53.000.

Hanson, Newell B., to Hanson Silo Company. Silage distribution apparatus. 3,817,408, Cl. 214-17.0cb.

Hanson Silo Company: *See—*
Hanson, Newell B., 3,817,408.

Hanway, John R., to United Engineering Corporation. Radio paging system. 3,818,145, Cl. 179-41.00a.

Hardy, William C.: *See—*
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,817,332.

Harhen, Paul F.: *See—*
Miller, Matthew S.; and Harhen, Paul F., 3,818,171.

Harianawala, Abdulhusain, to Polysar Limited-Polysar Limitee. Flowable isoolefin polymers containing bromine and process for production thereof. 3,817,956, Cl. 260-85.30c.

Harley A. Leonard: *See—*
Chambers, Derek; and Harley A. Leonard, 3,818,128.

Harmon Industries, Inc.: *See—*
Stevens, Harry S., 3,818,342.

Harnden John D., Jr., to General Electric Company. Metal oxide varistor with selectively positionable intermediate electrode. 3,818,411, Cl. 338-20.000.

Harper, Ernest V.; and Yasenchak, Richard W., to General Motors Corporation. Position compensator for a programmed work device. 3,818,290, Cl. 318-39.000.

Harrell, John W.; Patton, Bobbie J.; and Sexton, James H., to Mobil Oil Corporation. Regulator turn-on overshoot elimination. 3,818,319, Cl. 322-28.000.

Harris, Clyde W.; Neiswander, Robert S.; and Sungino, Paul S., to Te Company, The. Image surface scanning system. 3,817,593, Cl. 350-6.000.

Harris, Norman E.; and Reese, Elwyn T., to United States of America, Army. Method of detecting and measuring lipase activity. 3,817,838, Cl. 195-103.50r.

Harris, Robert F.; and Dunbar, Joseph E., to Dow Chemical Company, The. Sulfur-containinhydroxy pyrones and alkali metals salts thereof. 3,818,046, Cl. 260-343.500.

Harris-Intertype Corporation: *See—*
Miaskoff, Leonard; and Reed, David A., 3,816,866.

Harrison, Ian T.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,818,040.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,818,042.

Harrison, Wesley V.; and Foster, Wilbur A., to Western Digital Systems, Inc. Keyboard apparatus. 3,818,485, Cl. 340-365.00p.

Hartmeyer, John J.; and Ott, Errol J., to Ford Motor Company. Window regulator mechanism. 3,816,963, Cl. 49-103.000.

Hartwich, Reinhard; Kundel, Gerhard; Lampe, Hans H.; and Rudolph, Peter, to International Business Machines Corporation. Method and system arrangement for monitoring and indicating pulse timing functions with measurable time reference. 3,818,201, Cl. 235-11.310.

Harwood, Mark H., to Machining Methods Industries. Electromic taximeter. 3,818,186, Cl. 235-30.00r.

Hascic, Wladimir: *See—*
Kratochvil, Egon; and Hascic, Wladimir, 3,817,496.

Hasson, Harrith M., to Laparoscope cannula. . 3,817,251, Cl. 128-348.000.

Hatfield, Edwin Alexander: *See—*
Bennett, James Stewart; and Hatfield, Edwin Alexander, 3,817,664.

Hatsukano, Yoshikazu: *See—*
Teranishi, Yuichi; and Hatsukano, Yoshikazu, 3,818,249.

Hauni-Werke Koerber & Co. KG: *See—*
Wahle, Gueter; and Dahlgruen, Rolf, 3,817,158.

Haupt, Gunter; Lassle, Edwin; and Heisele, Karl-Heinz, to Walther Bueromaschinen GmbH. Single or multirevolution pawl clutch. 3,817,359, Cl. 192-17.00c.

Hauser, Frank W.: *See—*
Fomenko, Sergei M.; Coker, Frank B.; Hauser, Frank W.; Muller, Alex M.; Smith, Remy J.; and Winston, Theodore, 3,818,126.

Hauser, Gotz S.; and Melmoth, Robert B., to Ford Motor Company. Continuous hydrostatic extrusion die assembly and method for using it in forming extruded parts. 3,817,069, Cl. 72-60.000.

Hausmann, Ernst, to Wyss, Esher Limited. Centrifuge. 3,817,447, Cl. 233-7.000.

Hawkins, James B.: *See—*
Van Doorn, Donald W.; Hawkins, James B.; Pease, William C., III; and Colquett, Jack L., 3,816,970.

Hayashi, Katsumi, to Lubrizol Corporation, The. Hydroxy-terminated polyesters of thia-bisaldehydes. 3,817,928, Cl. 260-67.00s.

Hayati, Hossein: *See—*
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, 3,817,905.

Hayward, John S.: *See—*
Herz, Arthur H.; McGolgin, William C.; Hayward, John S.; and Peterson, Otis G., 3,818,371.

Head & Johnson: *See—*
Staib, Estel G., 3,817,222.

Heanue, Paul T., to Lipe Rollway Corporation. Bar replenishing system. 3,817,404, Cl. 214-1.500.

Hearn, Daniel P., to Atlantic Richfield Company. Airborn magnetic survey system using two optical magnetometers alternately switched to align with the field during the survey. 3,818,322, Cl. 324-.50r.

Heatransfer Corporation: *See—*
Adams, Samuel Frank, 3,817,054.

Heenan, Sidney A.; Ciccolella, Joseph A.; Majewski, Norbert; and Montalbano, Anthony J., to Amerace Esna Corporation. Lantern. 3,818,218, Cl. 240-41.300.

Heflinger, Lee O.: *See—*
Wuerker, Ralph F.; and Heflinger, Lee O., 3,818,372.

Hegeman, George D.; and Ellman, George L., to University of California, The Regents of. Method for obtaining optically active composition from racemate of vanillylmandelic acid. 3,817,830, Cl. 195-2.000.

Hegeman, George D.; and Ellman, George L., to University of California, The Regents of. Enzyme composition for measurement of urinary D-vanillylmandelic acid. 3,817,833, Cl. 195-62.000.

Heggs, Thomas Geoffrey: *See—*
Verne, Stefan; and Heggs, Thomas Geoffrey, 3,817,783.

Heiber, Hartnut; Forster, Karl-Heinz; and Lein, Werner, to Veb Polygraph Leipzing Kombinat fur Polygraphische Maschinen und Ausrustungen. Arrangement for separating a selectable number of sheets from the main output of a printing press under predetermined perating conditions. 3,817,175, Cl. 101-240.000.

Heil Quaker Corporation: *See—*
Ramsey, Robert W., 3,817,451.

Heiler, Wolfgang; Muller, Rudolf; and Becker, Jean-Jacques, to Vestra-Union S.A. Automatic guide device for sewing machine or machine for assembling two or more superposed elements. 3,817,196, Cl. 112-151.000.

Heinen, Gerhard: *See—*
Habfast, Karleugen; and Heinen, Gerhard, 3,818,184.

Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Stender, Klaus, 3,817,840.

Heinroth, Karl-August; Neumann, Herbert; Dauscher, Rudi; Jurischka, Hans-Dieter; and Bach, Hans, to Bayer Aktiengesellschaft. Process and an apparatus for the production of synthetic, crimped, highly elastic endless yarn. 3,816,988, Cl. 57-34.0hs.

Heisele, Karl-Heinz: *See—*
Haupt, Gunter; Lassle, Edwin; and Heisele, Karl-Heinz, 3,817,359.

Heisler, Raymond A. Plastic container with plug-type plastic cover. 3,817,420, Cl. 220-60.00r.

Heit, Allyn H., to Sybron Corporation. Semi-permeable membranes and method of production. 3,817,772, Cl. 117-11.000.

Hekimian Laboratories, Inc.: *See—*
Hekimian, Norris C., 3,818,359.

Hekimian, Norris C., to Hekimian Laboratories, Inc. Line equalizer circuit employing active gyrator. 3,818,359, Cl. 328-167.000.

Hells, Richard A.: *See—*
Locke, Edward V.; and Hells, Richard A., 3,817,606.

Hellwarth, George A.; and Milton, James E., to International Business Machines Corporation. Switching circuits particularly useful for analog-to-digital converters. 3,818,246, Cl. 307-251.000.

Helm, Herbert W., to Smithe, F. L., Machine Company, Inc. Gumming device. 3,817,207, Cl. 118-50.000.

Helmers, Gordon B. Dental console. 3,817,588, Cl. 312-209.000.

Helmick, James William; Goebel, Brownell Wesley; and Current, John Marvin, to Johns-Manville Corporation. Method and apparatus for fabricating flexible tubing. 3,817,804, Cl. 156-144.000.

Hennequin, Francois Maurice, to Compagnie de Saint-Gobain. Shaping rotating hollow bodies of thermoplastic materials with fluid jets. 3,817,737, Cl. 65-262.000.
Hennessy Products, Incorporated: *See*—
Connerat, Edwin B., 3,817,570.
Hennings, Klaus: *See*—
Schutze, Hans-Jurgen; and Hennings, Klaus, 3,817,799.
Henrick, Clive A., to Zoecon Corporation. Substituted pyrones. 3,818,047, Cl. 260-343.500.
Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Synthesis of codling moth attractant. 3,818,049, Cl. 260-345.900.
Henry, Carl M. Launching tee for tip cats. 3,817,525, Cl. 273-95.00f.
Henry, Nadine E. Writing guide for partially seeing, blind or muscularly disable persons. 3,816,943, Cl. 35-38.000.
Hensel, Willi: *See*—
Bocksch, Karl; and Hensel, Willi, 3,817,575.
Heraeus, W. C., GmbH: *See*—
Goltner, Wolfgang; Hohmann, Wolfgang; and Ruthardt, Rolf, 3,817,680.
Herb, Eugen, to Trumpf & Co. Tool exchanger device for a stamping machine. 3,816,904, Cl. 29-568.000.
Herbig, Paul G., to Caelus Memories, Inc. Magnetic memory disc pack balancing system. 3,817,088, Cl. 73-66.000.
Hercules Incorporated: *See*—
Aldrich, Paul H., 3,817,768.
Hereth, Horst. Method of and apparatus for fluidized bed treatment of solids or liquids. 3,817,696, Cl. 432-15.000.
Hergert, Herbert Lawrence: *See*—
Conca, Romeo John; Hergert, Herbert Lawrence; Maranville, Lawrence Frank; and Huges, Albert Marian, 3,817,825.
Herkes, John W. Separating device. 3,817,375, Cl. 209-106.000.
Heroux, Thomas M. Method and apparatus for testing hydraulic pumps. 3,817,097, Cl. 73-168.000.
Hershman, Arnold: *See*—
Forster, Denis; and Hershman, Arnold, 3,818,060.
Hertel, Gunther; and Ehrke, Ralf, to U.S. Philips Corporation. Device for positioning a data carrier in a reading apparatus. 3,818,188, Cl. 235-61.11r.
Herz, Arthur H.; McGolgin, William C.; Hayward, John S.; and Peterson, Otis G., to Eastman Kodak Company. Laser containing an organic dye lasing composition. 3,818,371, Cl. 331-94.501.
Heskett, Don E.; and Heskett, John Barthello, to Morton-Norwick Products Inc., mesne. Fluid treating apparatus and method. 3,817,381, Cl. 210-140.000.
Heskett, John Barthello: *See*—
Heskett, Don E.; and Heskett, John Barthello, 3,817,381.
Heslep, Milton E.: *See*—
Stewart, John D.; and Heslep, Milton E., 3,817,039.
Hess, Frederick R.; and Knott, Sydney T., to United States of America, Navy. Ambient pressure powered cable cutter. 3,817,200, Cl. 114-221.00a.
Hess, Wolfgang, to Girling Limited. System for disengaging a clutch in the transmission of a vehicle. 3,817,358. Cl. 192-.033.
Hesse, Robert Henry: *See*—
Barton, Derek Harold; and Hesse, Robert Henry, 3,817,988.
Hetz, Walter, to Siemens Aktiengesellschaft. Device for adjusting dental illumination. 3,818,217, Cl. 240-41.150.
Hewlett-Packard Company: *See*—
Crockett, Ivan L.; and Davidson, Ian H., 3,818,357.
Hanson, Delon C., 3,818,365.
Hewson, John E. Differential pressure transducer process mounting support. 3,817,283, Cl. 137-608.000.
Heyes, James; and Ward, Neal, to Beecham Group Limited. 5(4)-Amino-substituted imidazoles. 3,818,033, Cl. 260-309.000.
Hickman Developments, Inc.: *See*—
Moore, Robert G., 3,817,551.
Hicks, Harris Vernon; and Jones, Kenneth James. Lighting systems for road vehicles. 3,818,265, Cl. 315-82.000.
Hicks, William Robert George; Newman, John Leslie; Smith, Leslie William; Smith, Leslie William; and Wates, Michael John, to Norgren, C. A., Co. Valve device for draining liquid contaminant collected from compressed gas. 3,817,267, Cl. 137-204.000.
Hida, Jiro: *See*—
Kita, Yasuo; and Hida, Jiro, 3,817,117.
Higuchi, Masaru; Ohnishi, Hajime; and Yagihara, Hiroshi, to Daicel Ltd. Lubricants for thermoplastic resins such as polyvinyl chloride. 3,817,900, Cl. 260-30.40r.
Hilgemann, Hans, to Tour Agenturer AB, mesne. Convoluted conduit construction. 3,817,290, Cl. 138-178.000.
Hill, Charles E.; and Brobeck, William R., to Avco Corporation. LF amplifier, limiter, and filter system for a monitoring and warning system. 3,818,435, Cl. 340-58.000.
Hill, George B.; and Lund, Bryant D., to Brimco Manufacturing Company. Circuit breaker for the lighting systems of vehicles. 3,818,267, Cl. 315-82.000.
Hill, Harold Wayne, Jr.; and Campbell, Robert W., to Phillips Petroleum Company. Copolyamide-solvent system. 3,817,903, Cl. 260-33.40r.
Hill, Kerek Raymond; and Dahele, Jashwant Singh, to International Standard Electric Corporation. Waveguide frequency multiplier. 3,818,388, Cl. 333-73.00w.
Hill, Robert J.; Taylor, Ronald K.; and Olsen, Ronald N., to Recall Systems, Inc. Reminder system and apparatus. 3,817,374, Cl. 209-74.00r.
Hill, Thomas Bernard; and Butterell, Robin Darker. Battery powered electric monorail car and track system. 3,817,183, Cl. 104-119.000.
Hilton, John Leslie; and Faulkner, Arthur Manthorpe, to Plessey Handel und Investments A.G. Jointing clips for insulated conductors. 3,818,121, Cl. 174-84.00c.
Hinkamp, Paul E.; and Foye, Duane F., to Dow Chemical Company, The. Cellophane having a substantially haze-free coating of the dried residue from an organic solution of a vinylidene chloride polymer of. 3,817,780, Cl. 117-145.000.
Hintze, Rainer. Grill device. 3,817,164, Cl. 99-421.00v.
Hirano, Katsuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Multichannel stereophonic sound reproducing system for electronic musical instruments. 3,818,115, Cl. 84-1.240.
Hirano, Tadao: *See*—
Gotoh, Masanori; Hirano, Tadao; Toda, Sadasuke; Okugawa, Katuo; and Monden, Kazutaka, 3,818,434.
Hirasawa, Masataka: *See*—
Suzuki, Yasoji; and Hirasawa, Masataka, 3,818,245.
Hire, Charles John, to Fasco Industries, Inc. High voltage thermostat. 3,818,410, Cl. 337-354.000.
Hiroshima, Minoru; Watanabe, Shizuhisa; Iwasaki, Takashiro; Kobayashi, Sadao; Tanigami, Takahiko; and Inose, Fumiyuki, to Hitachi, Ltd. Device having a bridge circuit for detecting faults in an electric network. 3,818,330, Cl. 324-51.000.
Hiroyoshi, Hidetaka: *See*—
Isono, Akira; Fukushima, Mamoru; and Hiroyoshi, Hidetaka, 3,818,317.
Hirsbrunner, Hans G.; and Waseleski, Joseph W., Jr., to Texas Instruments, Incorporated. Fluid level detector. 3,818,470, Cl. 340-244.00r.
Hitachi Chemical Company, Ltd.: *See*—
Maeda, Yo; Ueyama, Tamotsu; and Fukutomi, Naoki, 3,816,909.
Hitachi, Ltd.: *See*—
Chiba, Tsuneyo; and Masaki, Akira, 3,818,252.
Ebara, Katsuya; and Takahashi, Sankichi, 3,817,323.
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Katagiri, Shinjiro; Ozasa, Susumu; Kimura, Hirokazu; Doi, Toshio; and Kimura, Hiroshi, 3,818,394.
Nomiya, Kosei; and Tsuiki, Takao, 3,818,441.
Shimada, Satoshi; Kozuma, Taisaku; and Kimura, Ichiro, 3,817,107.
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Teranishi, Yuichi; and Hatsukano, Yoshikazu, 3,818,249.
Tsukioka, Hideo; Sato, Moriichi; and Hondo, Kenichi, 3,817,906.
Yamamoto, Manabu, 3,818,129.
Hitchcock, Arthur A., to A.C.B. Corporation. Inertia switch with ball actuated deflect-able contact. 3,818,160, Cl. 200-61.45r.
Hobel, Peter, to Siemens Aktiengesellschaft. Electrical measuring device. 3,817,106, Cl. 73-391.000.
Hockey-Mate International, Inc.: *See*—
Blake, Laurence Stephen, 3,817,235.
Hoefke, Wolfgang: *See*—
Stahle, Helmut; Koppe, Herbert; Zeile, Karl; Hoefke, Wolfgang; and Samtleben, Hans-Wolfgang, 3,818,094.
Hoehn, Wolfgang, to ITT Industries, Inc. Monolithic integrated master-slave flip-flop circuit. 3,818,251, Cl. 307-291.000.
Hoenig, Stuart A.; and Ott, William E., to United States of America, Air Force, mesne. Non-destructive testing of metal structures by measuring exo-electron emission. 3,818,219, Cl. 250-358.000.
Hoesch Werke Aktiengesellschaft: *See*—
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Hoffman-LaRoche Inc.: *See*—
Bonnet, Dieter; and Rabenhorst, Helmut, 3,818,426.
Hoffmann, Herbert; and Schiebenhofer, Harm, to Krupp, Fried., Gesellschaft mit beschrankter Haftung. Device for exchanging bobbins on an open-end spinning machine. 3,816,990, Cl. 56-34.500.
Hoffmann-La Roche Inc.: *See*—
Adams, Jim Mills, 3,817,628.
Bretschneider, Hermann; Grassmayr, Klaus; Hohenlohe-Oehringen, Kraft; and Grussner, Andre, 3,818,027.
Horvath, Csaba; and Lipsky, Seymour R., 3,817,777.
Hofliger & Karg: *See*—
Bluthardt, Eberhard; Hoschele, Werner; and Spinner, Walter, 3,817,369.
Hofstetter, Hermann, to Sulzer Brothers Ltd. Air conditioning system for a textile machine. 3,816,987, Cl. 57-34.00r.
Hogan, Brian D.; and Twamley, Colin John, to Rabone Chesterman Limited. Tape measures. 3,816,925, Cl. 33-138.000.
Hohenlohe-Oehringen, Kraft: *See*—
Bretschneider, Hermann; Grassmayr, Klaus; Hohenlohe-Oehringen, Kraft; and Grussner, Andre, 3,818,027.
Hohmann, Walter; and Scheiter, Heinz, to Bayer Akiengesellschaft. Process for isolating 1,5- and 1,8-dinitroanthraquinone from anthraquinone nitration mixtures. 3,818,052, Cl. 260-369.000.
Hohmann, Wolfgang: *See*—
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Hoke, Bert, to Fried. Krupp Gesellschaft mit beschrankter Haftung. . 3,817,862, Cl. Method for treating waste wat.

Holik, Herbert; and Muehle, Erwin, to Escher Wyss G.m.b.H. Drier section. 3,816,941, Cl. 34-116.000.

Holland, Melvin G.; and Schulz, Manfred B., to Raytheon Company. Surface wave delay line structures having reduced temperature coefficient of delay time. 3,818,382, Cl. 333-10.000.

Holm Svend Age, to Danfoss A/S. Apparatus for producing the ring member of a gerotor gear set. 3,817,000, Cl. 51-204.000.

Holsinger, Jerry L., to Intertel, Inc. Receiver for amplitude modulated quadrature carrier signals. 3,818,347, Cl. 325-321.000.

Holtermann, Theodore J., to Outboard Marine Corporation. Anti-ventilation fence for a trim tab. 3,817,202, Cl. 115-34.000.

Holub, Fred F.: *See—*
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Honda Giken Kogyo Kabushiki Kaisha: *See—*
Gotoh, Masanori; Hirano, Tadao; Toda, Sadasuke; Okugawa, Katuo; and Monden, Kazutaka, 3,818,434.

Honda, Yukio, to Akira Tazaki. Information system utilizing pulse dip signal superimposed on a carrier signal. 3,818,466, Cl. 340-216.000.

Hondo, Kenichi: *See—*
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Honeywell Inc.: *See—*
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Perlowski, Andrew A.; Wallace, Robert H.; and Magers, Robert L., 3,818,203.
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Honeywell Information Systems, Inc.: *See—*
Beard, Albert LeMessurier; Couleur, John Francis; Lange, Ronald Edwin; Montee, Robert Frank; and Ruth, Richard Leroy, 3,818,460.
Clarke, Charles J., Jr., 3,818,261.

Hong, Young C. Electrical anti-theft system. 3,818,436, Cl. 340-64.000.

Hooker Chemical Corporation: *See—*
Golborn, Peter, 3,817,779.

Hooks, Haywood, Jr.: *See—*
Weisse, Guenther K.; Hooks, Haywood, Jr.; Hyde, Gene A.; and Trotz, Samuel I., 3,818,018.

Hoover, John W.: *See—*
Bayless, Frank K.; Brundage, Horace W.; Evans, Robert A.; and Hoover, John W., 3,816,872.

Hoover, Lonnie Daniel, to N L Industries, Inc. Fining and increasing the chill haze stability of fermented alcholic beverages. 3,818,111, Cl. 426-330.000.

Hopkins, Phillip M.: *See—*
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Hoppe, Dieter: *See—*
Schoellkopf, Ulrich; Gerhart, Fritz; Hoppe, Dieter; and Jentsch, Reinhard, 3,818,065.

Hoppe, Peter; Drouven, Gustav; and Muller, Johann, to Bayer Aktiengesellschaft. Fibrous insert for reinforcing foam plastic products and process for the production of these foam plastic products. 3,817,819, Cl. 161-140.000.

Horlein, Gerhard: *See—*
Goebel, Helmut; Horlein, Gerhard; and Emmel, Ludwig, 3,818,073.

Horsfall, Owen C., 20% to Lee, Raymond, Organization, Inc., The. Clock repair apparatus. 3,816,896, Cl. 29-200.00p.

Horsky, Eugene G., to FMC Corporation. Method of making a cellular cushioning structure. 3,817,803, Cl. 156-85.000.

Horton, David, to Letraset International Limited. Mesh heated die. 3,817,172, Cl. 101-31.000.

Horvat, Rudolph M.; and Molnar, Alexander, to Ford Motor Company. Automatic seat back latch release. 3,817,571, Cl. 296-65.00a.

Horvath, Csaba; and Lipsky, Seymour R., to Hoffmann-La Roche Inc. Solid-phase synthesis support. 3,817,777, Cl. 117-100.00s.

Hosaka, Akio, to Nissan Motor Company, Limited. Fault detector for motor vehicle safety device. 3,818,431, Cl. 340-52.00h.

Hoschele, Werner: *See—*
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Hosokawa, Toshio. Refrgieration system. 3,817,055, Cl. 62-468.000.

Hosono, Hiroo; and Nagahiro, Michinori, to Matsushita Electric Industrial Co., Ltd. Rotary head type magnetic recording and reproducing apparatus. 3,818,503, Cl. 360-85.000.

Hosotani, Tetsuo: *See—*
Nishimura, Hideo; Kanou, Kimjo; Ishigaki, Tamotsu; Hosotani, Tetsuo; and Kato, Sadamu, 3,817,129.

Hostettler, Fritz; and Cox, Eugene F., to Union Carbide Corporation. Process for producing urethane foam in the presence of a siloxane-oxalkylene block copolymer. 3,817,882, Cl. 260-2.5ah.

Howard, George C.; and Bearden, William G.; deceased (by Bearden, Edith Mae; executrix), to Amoco Production Company. Multi-layer well sand screen. 3,816,894, Cl. 29-163.50f.

Howard, James Augustus. Apparatus suitable for playing card games. 3,817,530, Cl. 273-135.00r.

Howard, Thomas P.: *See—*
Caron, Roger P.; and Howard, Thomas P., 3,817,286.
Caron, Roger P.; and Howard, Thomas P., 3,817,489.

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Howell, Donald C.: *See—*
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Hoye, John, to A/S Toten Cellulosefabrik. Process for fractionated recovery of lignin and cellulose from bark. 3,817,826, Cl. 162-93.000.

Hrach, Josef: *See—*
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Hubbard, David W.: *See—*
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Huber, Josef: *See—*
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Huber, Martin: *See—*
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Hubrich, Christoph: *See—*
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Hueber, Alfred, to Motoren- und Turbinen-Union. Integral turbine wheel with axial through-openings at the outer rim and with controlled rim cracks. 3,817,657, Cl. 416-244.000.

Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 1-Aminoalkyl-dibenzosemi-bullvalenes and the salts thereof. 3,818,020, Cl. 260-295.50s.

Huellmantel, Louis W.: *See—*
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Huesgen, Eugene L.; and Geary, Carl H., to Carrier Corporation. Stator blade mounting structure for turbomachines. 3,817,655, Cl. 415-217.000.

Huges, Albert Marian: *See—*
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Hughes Aircraft Company: *See—*
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Humiston, Homer A.: *See—*
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Hundley, Warren: *See—*
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Hunter, James R.: *See—*
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Hunter, Robert O., Jr.: *See—*
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Hursen, Thomas F.; Kokenik, Steve A.; and Prudy, David L., to Arco Nuclear, mesne. Thermoelectric generator. 3,818,304, Cl. 321-2.000.

Hussey, David William, to Elliott Brothers (London) Limited. Digitally operating graphic display system. 3,818,475, Cl. 340-324.00a.

Hussmann Refrigerator Co.: *See—*
Searcy, James A.; and Rasch, Milton A., 3,817,160.

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Jones, Cecil Roy, to Transfer Systems Incorporated. Nuclear power cask handling system. 3,817,398, Cl. 212-98.000.
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Jones, Faber B.; and Marrs, Oren L., to Phillips Petroleum Company. Poly(oxyalkylene)-polyester-polysulfide cross-linked polymers as sealants. 3,817,936, Cl. 260-76.000.
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Kauder, Knut, to Kabel- und Metallwerke Gutehoffnungshutte. Conduction of heat exchange fluids. 3,817,319, Cl. 165-1.000.

Kauder, Otto S.; and Pollock, Mark W., to Argus Chemical Corporation. Organotin stabilizer composition containing more than 18% tin and resin compositions containing the same. 3,817,915, Cl. 260-45.75k.

Kawabata, Minoru; and Nakamura, Keiiti, to Toyoda Koki Kabushiki Kaisha. Power steering device. 3,817,151, Cl. 91-375.000.

Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus with an automatic cartridge remover. 3,817,539, Cl. 360-93.000.

Kawagoe, Takahiro: *See—*
Furukawa, Junji; Kobayashi, Eiichi; and Kawagoe, Takahiro, 3,817,968.

Kawahara, Ichizo, to Olympus Optical Co., Ltd. Device for measuring distance of an object from the forward end portion of an endoscope. 3,817,619, Cl. 356-1.000.

Kawahara, Ichizo, to Olympus Optical Co., Ltd. Device for measuring distance of objects from the forward end portion of an endoscope. 3,817,631, Cl. 356-1.000.

Kawahara, Ichizo, to Olympus Co., Ltd. Device for measuring the actual dimension of an object at the forward end portion of an endoscope. 3,817,635, Cl. 356-171.000.

Kawakami, James H.: *See—*
Brode, George L.; and Kawakami, James H., 3,817,921.

Kawakami, Masato; Yoshida, Yoshinori; Nozaki, Chihiro; and Imai, Hideki, to Japan Synthetic Rubber Co., Ltd. Process for producing conjugated diene polymers. 3,817,954, Cl. 260-82.100.

Kawanishi, Masazumi: *See—*
Yamato, Eisaku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,818,015.

Kawasaki Steel Corporation: *See—*
Tanaka, Takayoshi; and Nonoyama, Mitsukane, 3,817,384.

Kay, Francis Xavier, to Instruments and Movenments Limited. Pipe joint connector. 3,817,561, Cl. 285-177.000.

Kayarian, George: *See—*
Toedtman, John August; Petri, George William; and Kayarian, George, 3,817,852.

Kazamaki, Tomokazu; and Kobayashi, Koichi, to Asahi Kogaku Kigyo Kabushiki Kaisha. Photographic objective particularly for supermicrofilm. 3,817,602, Cl. 350-214.000.

KDI-Bauer Corporation: *See—*
Jordan, Richard J., 3,817,625.

Kearney & Trecker Corporation: *See—*
Lohneis, Earl R.; and Zankl, Frank, 3,817,391.

Keas, Wilber L. Liquid flocculent additive from polyacrylamide. 3,817,891, Cl. 260-29.60e.

Keating, Edward. Automobile warning-buzzer suppressor. 3,818,432, Cl. 340-52.00d.

Keijzer, Johan H.; Pierle, Willy R. J.; and Van De Voordf, G., to Monroe Belgium N.V. Energy absorber. 3,817,566, Cl. 293-70.000.

Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, to Imperial Chemical Industries Limited. Production of composite structures. 3,817,813, Cl. 156-429.000.

Kelch, Keinz; and Schuh, Eduard, to Kienzle Apparate GmbH. Arrangement for compensating friction-induced electrostatic forces in a read-out device for disc-shaped record carriers. 3,818,506, Cl. 360-130.000.

Keller, David; and Keller, Henry. Device and process for reclaiming used wood. 3,817,459, Cl. 241-20.000.

Keller, Henry: *See—*
Keller, David; and Keller, Henry, 3,817,459.

Kelly, Robert C., to Upjohn Company, The. Certain bicyclic lactone diols. 3,818,045, Cl. 260-343.300.

Kempton, William G. Seal for pressurized dispensing apparatus. 3,817,431, Cl. 222-542.000.

Kendall Company, The: *See—*
Taylor, Glenn N., 3,817,244.

Kendall, Earl W., to Rohr Corporation. Method of electrolitic descaling-activating and brightening and plating titanium and its alloys. 3,817,844, Cl. 204-15.000.

Kendall, Willard E.: *See—*
Frankel, Donald P.; and Kendall, Willard E., 3,817,193.

Kennedy, Dennis L., to Martec Corporation. Vehicular steering system. 3,817,555, Cl. 280-266.000.

Kerotest Manufacturing Corp.: *See—*
Tricini, John D., 3,817,559.

Kerr, Paul F.: *See—*
Paull, Peter L.; and Kerr, Paul F., 3,817,038.

Kester, Charles E. Range finder. 3,817,621, Cl. 356-17.000.

Kienzle Apparate GmbH: *See—*
Kelch, Keinz; and Schuh, Eduard, 3,818,506.

Kiepe Electric AG: *See—*
Eckerman, Gunter; and Ludwig, Heinz-Georg, 3,817,185.

Kieserling, Th., & Albrecht: *See—*
Goeke, Alfons, 3,817,130.

Kiffe, Horst-Gregor; Scheller, Paul; and Hafner, Wolfgang, to Rambold, Frederick, KG. Measuring instrument. 3,816,929, Cl. 33-172.00e.

Kihn Harold E., 20% to Lee, Raymond, Organization, Inc., The. Vapor fuel carburetion system. 3,817,233, Cl. 123-133.000.

Kiko, Frederick J.: *See—*
Chambers, Charles W., Jr.; and Kiko, Frederick J., 3,818,151.
Chambers, Charles W., Jr.; and Kiko, Frederick J., 3,818,338.

Kilayko, Enrique L., to Precision Control Products Corporation. Valve. 3,817,264, Cl. .

Killmorgen Corporation: *See—*
Walker, Richard A.; and Maloy, Robert W., 3,818,198.

Kim, Yung K., to Dow Corning Corporation. Low temperature fluorosilicone compositions. 3,818,064, Cl. 260-448.20d.

Kimberly-Clark Corporation: *See—*
Braun, Ralph V.; and Schwoerer, Jerome L., 3,817,807.
Nissen, Ealter D.; and Hammond, Philip G., 3,817,514.

Kimmel, Richard: *See—*
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Kimura, Hirokazu: *See—*
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Kimura, Hiroshi: *See—*
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Kimura, Ichiro: *See—*
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Kimura, Yoshimasa: *See—*
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Kimura, Yoshitomo: *See—*
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Kinbara, Setsuro, to Japan Atomic Energy Research Institute. Pulse-shape discriminating circuit for discriminating between pulses of differing amplitude and time duration. 3,818,356, Cl. 328-112.000.

King, Hugh R. Reusable aerosal dispenser. 3,817,297, Cl. 141-20.000.

King, Tommie G.; and Snyder, Merlyn J. Board game apparatus. 3,817,531, Cl. 273-135.00f.

Kinzenbaw, Jon E., to Dietrech Manufacturing, Inc. Plow system with plurality of plow units and means for adjusting spacing between units in a continuous manner. 3,817,333, Cl. 172-283.000.

Kirby, Ransom Pitts: *See—*
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Kirkpatrick, Frederick J., to Nuclearay Inc. Container fill level inspector with product averaging system. 3,818,232, Cl. 250-357.000.
Kirkwood, Creal E. Sphere launching valve. 3,817,268, Cl. 137-268.000.
Kiselev, Sergei Nikolaevich: *See—*
Abaimov, Valery Grigorievich; Kochinev, Alexei Savelievich; Kiselev, Sergei Nikolaevich; Nikiforov, Vladimir Mifodievich; and Parsegov, Georgy Mesropovich, 3,817,511.
Kita, Yasuo; and Hida, Jiro, to Shimadzu Seisakusho Ltd. Gear pump or motor. 3,817,117, Cl. 74-462.000.
Kitahara, Makoto; Ishikawa, Shozo; Arita, Tetsuo; and Dohi, Masaaki, to Copyer Co., Ltd. Photoconductive substituted poly (1-vinyl-2-phenylbenzimidazoles. 3,817,749, Cl. 96-1.500.
Kitahara, Masahiro: *See—*
Kojo, Ichiro; Nakao, Eiichi; Katsumata, Masayuki; Kitahara, Masahiro; Tanaka, Tetsuji; Wada, Shinji; Tomioka, Taisaku; and Takahashi, Kunio, 3,817,736.
Kitsukawa, Yoshitsugi: *See—*
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Kitts, George J. Lock core puller for spring retained locks. 3,816,899, Cl. 29-263.000.
Kitzner, Ernest W.; Rhodes, Alex; and Wolfe, Earl W., to Ford Motor Company. Energy absorbing steering wheel support. 3,817,118, Cl. 74-492.000.
Kiwalle, Jozef; Merrit, Paul H.; and Sluetz, Edward J., to Production Technology Inc. Apparatus for flash removal from heat and pressure welded articles. 3,817,439, Cl. 228-2.000.
Kiyomoto, Akio: *See—*
Yamato, Eisaku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,818,015.
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Klee, Maurice, to Case, J. I., Company. Chain tightener for endless chain. 3,817,114, Cl. 74-242.afp.
Kleimann, Helmut: *See—*
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Klein, Gerhart P.; and Vierow, William F., to Mallory, P. R., & Co., Inc. Method for the fabrication of miniature anodes for tantalum capacitors by dipping in a viscous slurry. 3,817,782, Cl. 117-212.000.
Klein, Keith W., to General Electric Company. Multiple fuse device. 3,818,406, Cl. 337-148.000.
Kleine, Shirley J. Ornamental barrette. 3,817,260, Cl. 132-48.000.
Klemchuk, Peter. N-hydroxy-amino-s-triazines. 3,818,006, Cl. 260-249.500.
Kline, David T.: *See—*
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Klinger AG: *See—*
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Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Pluequet, Heinz; and Reske, Armin, 3,817,224.
Knabeschuf, Louis Henry; Shaw, Fred D., Jr.; and Souffle, Robert David, to Du Pont de Nemours, E. I., and Company. Brached EPDM copolymers and a process for their manufacture. 3,817,952, Cl. 260-80.780.
Knaebel, Thomas C.: *See—*
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Kniel, Ludwig: *See—*
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Knorr-Bremse KG: *See—*
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Erickson, John W.; and Budrys, Vitolis, 3,817,446.
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Kobernus, William D., to Grayhill, Inc. Push button switch. 3,818,169, Cl. 200-159.00a.
Koblick, Sol N.: *See—*
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Koch, Wilhelm; and Walter, Gustav, to Demag Aktiengesellschaft. Apparatus for introducing a launching rope in a continuous casting installation for metal. 3,817,316, Cl. 164-274.000.
Kochenderfer, Wayne N.: *See—*
Coopersmith, Myron; Kochenderfer, Wayne N.; and Felty, Lanny G., 3,818,105.
Kochinev, Alexei Savelievich: *See—*
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Koehler, Carlton L. Expansive gas protective device. 3,817,299, Cl. 141-82.000.
Koehler Manufacturing Company, mesne: *See—*
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Koenig, Martin F.; and Issa, Manuel, deceased (by, Sheedy, Patrick T., administrator), to Cutler-Hammer Inc. Phase collector assembly for multiple run busway. 3,818,417, Cl. 339-22.00b.
Koerner, Gotz: *See—*
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Kokenik, Steve A.: *See—*
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Komline, Thomas R. Patient positioner device. 3,817,509, Cl. 269-322.000.
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Konishi, Yoshihiro; and Takata, Shinsaku, to Nippon Hoso Kyokai and TDK Electronics Co., Ltd. Non-reciporcating circuit device using a circulator. 3,818,381, Cl. 333-1.100.
Konz, Wilhelm; and Waldeck, Franz, to Boehringer Ingelheim GmbH. Pharmaceutical compositions containing a α-phenyl-α-pyridyl-acetonitrile and method of use. 3,818,091, Cl. 424-263.000.
Kooistra, Philip A.: *See—*
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Korton Sciences Incorporated: *See*—
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Kovacs, Jenoe; and Eisfeld, Wolfgang, to Badische Aniline- & Soda-Fabrik Aktiengesellschaft. Production of soluble polyimides. 3,817,927, Cl. 260-65.000.
Kovacs, Jenoe; and Schefczif, Ernst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of poly(amide-imides). 3,817,942, Cl. 260-78.0tf.
Kowal, Leonard J.; and Gibson, Robert C., to Imperial-Eastman Corporation. Can tapper with explosion preventing means. 3,817,302, Cl. 141-383.000.
Kozuma, Taisaku: *See*—
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Kratochvil, Egon; and Hascic, Wladimir, to Semperit AG. Mixing and conveying apparatus. 3,817,496, Cl. 259-6.000.
Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Method and apparatus for controlling a knitting machine. 3,817,059, Cl. 66-154.00a.
Krautzberger, Franz: *See*—
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Kreidl, Ekkehard L.; and Acton, Ricahrd G., to Koehler Manufacturing Company, mesne. Apparatus for recombining hydrogen and oxygen and protectively returning water of recombination to the battery electrolyte. 3,817,717, Cl. 23-288.00r.
Krenzer, John, to Velsicol Chemical Corporation. Benzothiazol substituted thiadiazolidines. 3,818,024, Cl. 260-305.000.
Krigbaum, Clarence A., to Tire-Gator, Inc. Tire shredding device. 3,817,463, Cl. 241-152.00r.
Krimmel, Eberhard, to Siemens Aktiengesellschaft. Film resistor and method of making. 3,818,413, Cl. 338-309.000.
Krivorotchenko, Erik Mikhailovich: *See*—
Tjutjunnikow, Anatoly Borisovich; Shporkhun, Vitaly Ivanovich; Marchenko, Alexandr Nikolaevich; Pochinok, Galina Panteleimonovna; and Krivorotchenko, Erik Mikhailovich, 3,817,501.
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Kuehn, Donald E.; and Lyon, John Keith, to TRW Inc. Chuck assembly for fasteners. 3,816,895, Cl. 29-200.00p.
Kugler, Tibor; and Silbiger, Jakob, to Lonza Ltd. Apparatus for preparation of finely particulate silicon oxides. 3,817,711, Cl. 23-277.00r.
Kuhlman, William C.; and Wukusick, Carl S., to United States of America, Atomic Energy Commission. High temperature thermocouple alloy systems. 3,817,793, Cl. 136-236.000.
Kuhne, Manfred; and Vogel, Christian, to Ciba-Geigy Corporation. Control of weeds with 2-alkylthis-4,6-diamino-S-triazines. 3,817,741, Cl. 71-93.000.
Kuhnl, Leopold K., to Warner-Lambert Company. Adjustable razor blade cartridge. 3,816,916, Cl. 30-47.000.
Kuljian, Harry A. Combination transmission line and fluid conduit. 3,818,116, Cl. 174-15.00c.
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Kuroiwa, Masayuki: *See*—
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Lafferty, James H.; Reiter, Raymond A.; and Gibilisco, Paul J., to Carpenter Technology Corporation. Apparatus for making metal powder. 3,817,503, Cl. 266-34.00r.
Lambert, Jack L.; and Fina, Louis R., to Kansas State University Research Foundation, The. Method of disinfecting water and demand bactericide for use therein. 3,817,860, Cl. 210-29.000.
Lampe, Hans H.: *See*—
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LaNgdon, Jack L., to International Business Machines Corporation. Construction of monolithic chip and method of distributing power therein for individual electronic devices constructed thereon. 3,817,797, Cl. 148-175.000.
Lange, Ronald Edwin: *See*—
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Lapidus, Milton; and McGettigan, Marian M., to American Home Products Corporation. L-aspartic acid derivatives. 3,818,077, Cl. 260-501.110.
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Laridon, Urbain Leopold; and Van Den Houte, Jozef Willy, to AGFA-Gavaert N.V. Free redical photographic system containing a pyrylium dye former. 3,817,752, Cl. 96-48.00r.
Larraburu, Philippe M. Manually operated lamphouse. 3,818,216, Cl. 240-41.300.
Larson, Wesley S., to Water Control Products, Inc. Fluid control mechanism. 3,817,279, Cl. 137-572.000.
Larsson, Sven Gunnar Olof, to Gunnebo Bruks Aktiengesellschaft. Trigger mechanism for cartridge tool. 3,816,951, Cl. 42-69.00r.
Larsson, Sven Sigvard; and Brange, Lennart Bertil Vilhelm, to Kockums Mekaniska Verkstads AB. Welding apparatus for interconnecting flanges. 3,818,172, Cl. 219-82.000.
Lasker, Adolphe H. A. Steak or meat cutting assembly. 3,817,138, Cl. 83-466.100.
Lassle, Edwin: *See*—
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Laughlin, Clayton Austin, to Standard Packaging Corporation. Vertical index device. 3,816,949, Cl. 40-140.010.
Laurance, Dale Roderic: *See*—
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Willner, Kurt; and Lavamaki, Maurice M., 3,818,321.
Law, John; and Neill, Donald E., to Carrier Corporation. Control system having means for expanding the useful frequency response. 3,817,651, Cl. 415-1.000.
Lazzarotti, S. James; Wojtowicz, Edward A.; and Hunter, James R., to Burroughs Corporation. Document edging and stack advance system. 3,817,516, Cl. 271-150.000.
Le Fort, Gilbert J.: *See*—

Boutmy, Patrick E.; Le Fort, Gilbert J.; and Betoule, Daniel J. M., 3,818,360.
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Young, Edward L. J., 3,817,550.
Leblois, Charles Julien Martin. Franpac. 3,817,198, Cl. Method of assembling a metal.
Leblond, Jean R., to Uniroyal Societe Anonyme. Press for tire shaping and vulcanizing. 3,817,670, Cl. 425-46.000.
Ledbetter, Robert P. Direction finder. 3,818,479, Cl. 343-113.00r.
Lee, Barry T.; Wimmer, Gunther W.; and Hyatt, Gilbert P., said Lee and said Wimmer assors. to Micro Computer, Inc. Illumination system. 3,818,496, Cl. 354-75.000.
Lee, Lester T. C.; Pearce, Eli M.; and Litt, Morton H., to Allied Chemical Corporation. Novel dicarboxylic acids containing diketopiperazine groups and polyamide polymers prepared therefrom. 3,817,943, Cl. 260-78.0tf.
Lee, Pang-Kai: *See—*
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Chalmers, John Stuart, 3,817,213.
Horsfall, Owen C., 3,816,896.
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Lee, Ronald R. Independently rotatable indicia disco and braking mechanism therefor. 3,817,532, Cl. 273-142.0ha.
Lee, Thomas E.: *See—*
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Lefebvre, Alfred; Masch, Helmut E. W.; Robert, Louis; and Morse, Hugh B., to Fibreboard Corporation. Carton forming apparatus with simultaneously ignited heaters. 3,817,682, Cl. 431-6.000.
LeFever, Romie L., to Self Serv Fixture Co., Inc. Package display rack. 3,817,395, Cl. 211-170.000.
Lefevre, Clyde E.; Hagen, James P.; and Owens, Ben H. Microfiche camera processor. 3,817,754, Cl. 96-67.000.
Legille, Edouard, to S.A. des Anciens Etablissements Paul Werth. Trailing gauge. 3,816,932, Cl. 33-74.00p.
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Lemelson, Jerome H. Tool control arrangement and method. 3,817,647, Cl. 408-8.000.
Lemelson, Jerome H. Apparatus for forming sheet material. 3,817,671, Cl. 425-66.000.
Lemelson, Jerome H. Card transducing apparatus and method. 3,818,500, Cl. 360-2.000.
Lemire, George. Safety apparatus. 3,818,238, Cl. 307-92.000.
Lemmers, Eugene, to General Electric Company. Method of making an electrode having a filament with entending legs. 3,817,296, Cl. 140-71.600.
Lemmers, Johannes W. F. M.: *See—*
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Lenoir, Franz N.; and Van Gyseghem, Jean, to Miller Printing Machinery Co. Differential drive mechanism. 3,817,122, Cl. 74-679.000.
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Leonhart, Xaver. Play control device for amusement game. 3,817,519, Cl. 273-30.000.
Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, to Stauffer Chemical Company. Coating composition. 3,817,905, Cl. 260-37.00r.
Lerou, Roger J. Wall suspended humidifier. 3,817,499, Cl. 261-29.000.
Leroy, Pierre; and Sprunck, Emile, said Leroy assor. to Creusot-Loire. Device for injection fluids in tuyeres with separate multiple feeds. 3,817,505, Cl. 266-41.000.
Leroy, Pierre; Gombert, Marcel; and Sprunck, Emile, to Creusot-Loire, Societe Anonyme, mesne. Method for cooling a tuyere of a refining converter. 3,817,744, Cl. 75-60.000.
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Levine, Richard C., to Diecomp, Inc. Method and apparatus for controlling placement of split die cavities. 3,818,195, Cl. 235-150.000.
Levor, Henry. Self-shaping support for flexible materials. 3,816,884, Cl. 24-243.0cc.
Lewis, Arthur L., to McMullen, John J., Associates, Inc. Containerized system for waste disposal. 3,817,415, Cl. 214-83.300.
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Libeer, Marcel Jan: *See—*
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Taylor, Harold M.; Davenport, James D.; and Hackler, Ronald E., 3,818,009.
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Lind, Bjorn Ivar; and Mansson, Mans Gunnar Ove, to Nordiska Maskinfitt Aktiebolaget. Apparatus for detecting broken threads or other disturbances in a fibre web. 3,818,236, Cl. 250-561.000.
Lindberg, John E. Fire-wall and burn-through protection system. 3,818,469, Cl. 340-229.000.
Linde, Lars Hilding, to AB Bonnierforetagen. Device for shrinking a wrapper, consisting of a plastic sheeting shrinkable by heating, around a transport unit. 3,818,182, Cl. 219-388.000.
Lindqvist, Stig Gustaf Wilhelm: *See—*
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Linhart, Samuel B., to United States of America, Interior. Control of vampire bats. 3,818,100, Cl. 424-281.000.
Linnert, Hans; Muller, Walter; and Weigel, Georg, to Transformatoren Union Aktiengesellschaft. Filter choke for high electrical voltages and large outputs. 3,818,400, Cl. 336-58.000.
Lipe Rollway Corporation: *See—*
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Pastors, Juris Avgustovich; Litsitis, Andrei Andreevich; and Grislis, Viktor Yanovich, 3,818,409.
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Lloyd, Norman E.; Lewis, Leonard T.; and Logan, Robert M., to Standard Brands Incorporated. Process for isomerizing glucose to fructose. 3,817,832, Cl. 195-31.00f.

Lo Cascio, Jack J., to Rapid-American Corporation. Brassiere with yieldable side panel construction. 3,817,255, Cl. 128-498.000.

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Lobenhofer, Gerhard, deceased (by Lobenhofer, Anna; Mauracher, Annemarie; heiresses; and Beifuss, Dieter), to Licentia Patent-Verwaltungs-G.m.b.H. Tuning arrangement. 3,818,350, Cl. 325-445.000.

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Lockard, Joseph Larue, to AMP Incorporated. Zero setting mechanism for plural granged thumbwheel counter switches. 3,818,155, Cl. 200-18.000.

Locke, Edward V.; and Hells, Richard A., to Avco Everett Research Laboratory, Inc. Mirror for high power lasers and method of fabricating same. 3,817,606, Cl. 350-310.000.

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Lockheed Electronics Company, Inc.: *See—*
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Lohneis, Earl R.; and Zankl, Frank, to Kearney & Trecker Corporation. Tool storage magazine. 3,817,391, Cl. 211-1.500.

Lombardi, Victor J. Cylinder and dial construction for knitting machines. 3,817,058, Cl. 66-8.000.

Long, David M., Jr., to University of Illinois Foundation. Radiopaque agents comprising brominated perfluorocarbons. 3,818,229, Cl. 250-312.000.

Long, Robert Alvin, to AMP Incorporated. Apparatus for connecting conductors to terminals in a pre-load electrical connector. 3,816,897, Cl. 29-203.0mw.

Lonza Ltd.: *See—*
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Chambers, Charles W., Jr.; and Kiko, Frederick J., 3,818,338.

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Lovendusky, Charles Michael; and Pass, Raymond Vincent, to AMP Incorporated. Credit verification system and terminal therefor. 3,818,187, Cl. 235-61.70b.

Lox Equipment Company: *See—*
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Loy, George W., to Scio Cabinet, Inc. Indexing apparatus. 3,817,814, Cl. 156-556.000.

Lu, Matthias C. H.: *See—*
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Ludtke, William P.; and Peterson, Carl R., to United States of America, Navy. Parachute pack with release mechanism. 3,817,179, Cl. 102-4.000.

Ludwig, Heinz-Georg: *See—*
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Ludwig, Peter: *See—*
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Luetzow, Edwin Jerome, to G.T. Schjeldahl Company. Flexible printed circuit interconnecting cable. 3,818,122, Cl. 174-86.000.

Luhowy, Gabriel J., to Transmation, Inc. Portable digital temperature meter. 3,817,105, Cl. 73-362.0ar.

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Lull, Le Grand H., to Lull Engineering Company, Inc. Versatile utility carriage for mobile loaders. 3,817,567, Cl. 294-88.000.

Lummus Company, The: *See—*
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Lummus Industries, Inc.: *See—*
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Lund, Bryant D.: *See—*
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Lundqvist, Ulf Rolfsson, to Forenade Fabriksverken. Device for establishing a seal between cylindrical surfaces. 3,817,517, Cl. 277-165.000.

Luneburg, Uber: *See—*
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Lungqvist, Harald Oskar. Handle operated crank device with freewheel mechanism. 3,817,361, Cl. 192-95.000.

Luther, Elmer M.; and Okumura, Setsuo A., to TRW Inc. Deployable annular solar array. 3,817,477, Cl. 244-1.0ss.

Luursema, Meerten; Palmers, Hilbert; and Wijsboom, Dan Bernardus, to U.S. Philips Corporation. DC-AC converter. 3,818,312, Cl. 321-44.000.

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M & W Gear Company: *See—*
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Ma, John, to Zenith Radio Corporation. Thick film VHF tuner wherein UHF subchassis is used as external ground element for VHF tuner. 3,818,349, Cl. 325-352.000.

Maack, Horst Egon Fred Ludwig: *See—*
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Maass, Georg J. J.; and Korpel, Hendrik A., to Stamicarbon N.V. Process for the recovery of ammonium sulphate from an aqueous ammonium sulphate solution containing methionine. 3,817,718, Cl. 23-302.000.

MacDermid Incorporated: *See—*
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Mace, Jacques; and Eschger, Philippe Hubin, to Societe Nationale des Petroles d'Aquitaine. Polymerization of vinyl compounds in suspension. 3,817,965, Cl. 260-93.50w.

Mace, Jacques; and Pornin, Rene, to Societe Nationale des Petroles d'Aquitaine. Modification of organic polymers. 3,817,967, Cl. 260-93.50a.

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Mackey, E. Scudder; Papp, Richard J.; and Waring, James, to GAF Corporation. Antistatic photographic film. 3,817,755, Cl. 96-87.00a.

Maeda, Kazuya; and Fujiwara, Sigemi, to Matsushita Electric Industrial Co., Ltd. Clamping units for use in packaging. 3,816,882, Cl. 24-221.00r.

Maeda, Yo; Ueyama, Tamotsu; and Fukutomi, Naoki, to Hitachi Chemical Company, Ltd. Method of making a wire memory plane. 3,816,909, Cl. 29-604.000.

Magers, Robert L.: *See—*
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Magnavox Company, The: *See—*
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Maier, Albert; Pfeifer, Josef; and Ambraschka, Kasimir, to Agfa-Gevaert Aktiengesellschaft. Microfilm reading apparatus. 3,817,612, Cl. 353-27.000.

Maillet, Wilfrid G.: *See—*
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Maine, Robert W., to Work Area Protection Corporation. Warning light assembly with modularized inserts. 3,818,439, Cl. 340-81.00r.

Maiocco, Humbert Luciano, to Beloit Corporation. Apparatus for dispersing colorant in plasticized thermoplastic material. 3,817,675, Cl. 425-207.000.

Maiorov, Valery Andreevich: *See—*
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Majkrzak, Charles P.; and Polgar, Michael S., to International Telephone and Telegraph Corporation. Shipboard yardarm half-wave antenna. 3,818,488, Cl. 343-709.000.

Makino, Minoru, to Kabushiki Kaisha Tanita Seisakusha. Ingition device. 3,817,694, Cl. 431-255.000.

Malfroid, Pierre, to Solvay & Cie. Process for the polymerization of oxirane derivatives. 3,817,877, Cl. 260-2.00a.

Malinowski, Raymond J.: *See—*
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Mallory, P. R., & Co., Inc.: *See—*
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Malmin, Oscar. Combined endodontic irrigating, injecting and sealing instrument. 3,816,921, Cl. 32-40.00r.

Maloy, Robert W.: *See—*
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Maltz, Georg; Buschkamp, Heinz; and Schonfeld, Hans, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Connection between coaxial conductor pairs. 3,818,123, Cl. 174-88.00c.

Mancilla, Edward; Peting, Richard L.; and Van Ness, Laverne W., to Wilson Pharmaceutical & Chemical. Process for producing of alkali metal salt of heparin. 3,817,831, Cl. 195-7.000.

Manco Mfg. Co.: *See—*
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Manor, Gedalyahu, to Technion Research and Development Foundation, Ltd. Overload release mechanism for three-point hitch device on tractors. 3,817,557, Cl. 280-452.000.

Mansson, Mans Gunnar Ove: *See—*
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Manufacture des Rolex S.A.: *See—*
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Marathon Oil Company: *See—*
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Marini, Roberto, to Societa Italiana Telecomunicazioni Siemens S.p.A. Stabilized power supply with transformer isolation. 3,818,306, Cl. 321-2.000.

Markbreiter, Stephen J.: *See—*
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Markhart, Albert H.: *See—*
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Marks, Robert E., to Envirotech Corporation, mesne. Terpene recovery process including control of a digester relief outlet. 3,817,824, Cl. 162-61.000.

Markson, David E., to Package Exhibit Programs, Inc. Portable display apparatus. 3,817,396, Cl. 211-178.00r.

Marondel, Gunther: *See—*
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Marotta Scientific Controls, Inc.: *See—*
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Marsh, John: *See—*
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Marsh, Walter G.; and Rhoades, James J., to Tapco Products Company, Inc. Sheet metal brake. 3,817,075, Cl. 72-319.000.

Marshall, Neil A., to International Telephone and Telegraph Corporation. High voltage measuring apparatus. 3,818,336, Cl. 324-118.000.

Marsland, John E., Jr.; and Malinowski, Raymond J., to Uniroyal Inc. Press method of making expanded thermoplastic sheet. 3,818,085, Cl. 264-45.000.

Martec Corporation: *See—*
Kennedy, Dennis L., 3,817,555.

Martin, Dalton W.: *See—*
McDonald, John C.; and Martin, Dalton W., 3,818,456.

Martin, John W. Apparatus for establishing a line in the same plane as a reference line. 3,817,624, Cl. 356-138.000.

Martin, Louis E., to Societe Anonyme Poclain. Apparatus for supplying fluid to a reversible drive organ. 3,817,154, Cl. 91-420.000.

Martin, Marie. Inflatable hair washing aid. 3,816,858, Cl. 4-159.000.

Martin Marietta Corporation: *See—*
Kramer, Irvin R., 3,817,796.

Martin, Rene Jean, to Societe Francaise des Tubes Pneumatiques,. Self-steering carrier for various conveyor systems. 3,817,476, Cl. 243-16.00r.

Martin, Robertson & Bain Ltd.: *See—*
Cox, James P., 3,817,370.

Martino, Louis D.: *See—*
Pickens, Robert C., Jr.; Martino, Louis D.; and Kimmel, Richard, 3,817,817.

Martins, Joseph G.: *See—*
Young, Raymond H., Jr.; Markhart, Albert H.; and Martins, Joseph G., 3,817,924.

Maruniak, Adam B.; and Jirgens, Zigfrids, Sr. Non-metallic, one-piece filter strainer head. 3,817,390, Cl. 210-460.000.

Maruyama, Takashi: *See—*
Nakashio, Seizo; Takemura, Toshio; Maruyama, Takashi; Ota, Kunio; and Seto, Tetsuki, 3,817,919.

Masaki, Akira: *See—*
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Masch, Helmut E. W.: *See—*
Lefebvre, Alfred; Masch, Helmut E. W.; Robert, Louis; and Morse, Hugh B., 3,817,682.

Maschinenfabrik und Giesserei Netstal AG: *See—*
Ruegg, Edwin, 3,817,679.

Mase, Toshio, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electric cigarette lighter. 3,818,179, Cl. 219-267.000.

Mason, Ernest Arthur: *See—*
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,817,813.

Mason, Ralph B.; and Hamner, Glen P., to Esso Research and Engineering Company. Cracking by thermal hydrodepolymerization. 3,817,854, Cl. 208-59.000.

Massachusetts Institute of Technology: *See—*
McMahon, Robert E., 3,818,243.

Masson, J. Gilbert. Electronic temperature control system. 3,818,183, Cl. 219-497.000.

Mastrovito, Donald, to Family Products, Inc. Threaded container seal. 3,817,418, Cl. 215-329.000.

Masuda, Noboru; and Nishino, Yu, to Denki Onkyo Co., Ltd. Rotary sensor using magneto resistance devices for detecting the rotation of a mechanical system. 3,818,326, Cl. 324-34.0ps.

Matejec, Reinhart; and Puschel, Walter, to Agfa-Gevaert Aktiengesellschaft. Color forming agents for the peroxide color intensifying process. 3,817,751, Cl. 96-48.00r.

Matkan, Josef, to Canon Kabushiki Kaisha, mesne. Recording of information in bit form. 3,818,492, Cl. 346-74.00p.

Matson, Carl G. Machine for vibrating, leveling and screeding concrete in a form. 3,817,644, Cl. 404-114.000.

Matson, Louis R. Breathing sensor. 3,817,238, Cl. 128-2.00r.

Matsubishi Chemical Industries, Ltd.: *See—*
Fukutani, Hideo; and Miura, Konoe, 3,817,876.

Matsumi, Kouichi: *See—*
Mizutani, Takayuki; and Matsumi, Kouichi, 3,817,710.

Matsushima, Hiroshi: *See—*
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Matsushita Electric Industrial Co., Ltd.: *See—*
Arimura, Ichiro; Goto, Hiroshi; Matsushima, Hiroshi; and Nakao, Yoshikazu, 3,818,366.
Fujimura, Kenichi; and Tanaka, Takashi, 3,816,908.
Hosono, Hiroo; and Nagahiro, Michinori, 3,818,503.
Kawada, Toshio; Torama, Tadashi; and Kobayashi, Tamio, 3,817,539.
Maeda, Kazuya; and Fujiwara, Sigemi, 3,816,882.
Nagahiro, Michinori; and Nakata, Yoshinobu, 3,817,437.
Sakamoto, Yoichi, 3,818,353.
Sawada, Katsuo; Yoneda, Eisaku; Kajikawa, Saburo; and Yasunaga, Ryuichi, 3,816,983.
Terui, Yasuaki, 3,818,351.
Yoshida, Tomio; and Okamoto, Keiichi, 3,818,482.

Matsushita Electric Industrial Company Limited: *See—*
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Matsushita Electric Works, Ltd.: *See—*
Abe, Toshiro; and Kakite, Keizi, 3,818,370.

Mattel, Inc.: *See—*
Buck, Gordon H., 3,817,536.

Mattson, Gary L.; and Segar, Lawrence P., to International Business Machines Corporation. Protective circuit for semi-conductor switch. 3,818,311, Cl. 321-43.000.

Matuka, Jozsef Hartmuth; and Matuka, Margit. Sanitary refuse receiver and harness device (for use on small animals). 3,817,217, Cl. 119-95.000.

Matuka, Margit: *See—*
Matuka, Jozsef Hartmuth; and Matuka, Margit, 3,817,217.

Matz, Bjorn J.; Nenninger, Theodore P.; Whitney, James C.; Ciaraldi, Anthony; and Wilder, Leslie N., to Dictaphone Corporation. Dictating and transcribing system. 3,817,436, Cl. 226-25.000.

Mauk, Kenneth G.; and O'Neal, Peter J. R. F. system for detecting unauthorized travel of articles through a selected zone. 3,818,472, Cl. 340-280.000.

Mauracher, Annemarie: *See—*
Lobenhofer, Gerhard, deceased, 3,818,350.

Maurer, Donald D., to Medtronic, Inc. Electrode for transcutaneous stimulation. 3,817,252, Cl. 128-416.000.

Maurer, Donald D., to Medtronic, Inc. Transcutaneous stimulator and stimulation method. 3,817,254, Cl. 128-421.000.

Mauser Kommandtgesellschaft: *See—*
Bocksch, Karl; and Hensel, Willi, 3,817,575.

Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, to Centre Europeen de Recherches Mauvernay C.E.R.M. 3-Alkoxy- or 3-aryloxy-2-(diaryl-hydroxy)-methyl-propylamines. 3,818,000, Cl. 260-247.70c.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See—*

Seiler, Nikolaus; Thobe, Josef; and Werner, Gottfried, 3,817,630.
Maxam, Allen B. Model vehicle wheel structure. 3,817,581, Cl. 301-6.00r.
Mayer, Karl; and Branscheid, Werner. Gear wheel pump with feed passage of constant hydraulic cross section. 3,817,668, Cl. 418-206.000.
Mayer, Rolf, to Bosch, Robert, Hausgeraete GmbH. Compactor for refuse. 3,817,170, Cl. 100-229.00a.
Mays, David W.: *See—*
Kizziar, Theodore C.; and Mays, David W., 3,817,163.
Maytag Company, The: *See—*
Smith, Thomas R., 3,816,942.
Maytum, Derek Laurie, to Gunson's Sortex Limited. Fruit pitting machine. 3,817,168, Cl. 99-490.000.
McAfee, Larry Gene: *See—*
Beadle, William Edgar; Embree, Milton Luther; McAfee, Larry Gene; and Moyer, Stanley Floyd, 3,817,794.
McAfee, Loyd O.: *See—*
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McCarron, Russell Lawrence: *See—*
Schultz, Jay Ward; and McCarron, Russell Lawrence, 3,817,747.
McCrobie, George L., to Xerox Corporation. Projection lens with add lens elements. 3,817,599, Cl. 350-183.000.
McDavid, Larry S.: *See—*
United States of America, National Aeronautics and Space Administration, 3,817,627.
McDonald, George. Vehicles for gliding flight. 3,817,478, Cl. 244-16.000.
McDonald, John C.; and Martin, Dalton W., to Vidar Corporation. Message metering system. 3,818,456, Cl. 340-172.500.
McDonnell Douglas Corporation: *See—*
Osofsky, Irving B., 3,817,096.
McDonough, Cletus G., to Molex, Incorporated. Integrated circuit terminal and method. 3,818,423, Cl. 339-258.00p.
McGarr, John J., to USM Corporation. Manufacture of particulate polyurethane material in an organic medium and in the presence of a bentone. 3,817,886, Cl. 260-18.0tn.
McGeachy, Donald E.: *See—*
Cook, Roger J.; and McGeachy, Donald E., 3,817,562.
McGettigan, Marian M.: *See—*
Lapidus, Milton; and McGettigan, Marian M., 3,818,077.
McGill, Robert L., Jr.: *See—*
Green, Norman; McGill, Robert L., Jr.; and Vergara, William C., 3,817,582.
McGlothlin, Charles J. Can top lock. 3,817,563, Cl. 292-254.000.
McGolgin, William C.: *See—*
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McGowan, Joseph W.: *See—*
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McGraw-Edison Company: *See—*
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McIntosh, Harold A.: *See—*
Randolph, Hollis L.; McIntosh, Harold A.; and Teichert, Allen Lee, 3,818,405.
McIntyre, James L.: *See—*
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McKinney, Claude Owen: *See—*
Evans, Richard E.; and McKinney, Claude Owen, 3,817,872.
McKnight, Hugh P., to Lilly, Eli, and Company. Apparatus for continuously rectifying tow-piece hard capsules. 3,817,423, Cl. 221-173.000.
McLain, Larry D. Cooking and smoking oven device. 3,817,166, Cl. 99-480.000.
McMahon, Robert E., to Massachusetts Institute of Technology. Error correction by redundant pulse powered circuits. 3,818,243, Cl. 307-219.000.
McMullen, John J., Associates, Inc.: *See—*
Lewis, Arthur L., 3,817,415.
McNab, Donald W. Portable container and seating device. 3,817,574, Cl. 297-188.000.
McNaughton, J. W.: *See—*
Gibbs, Wallace E., 3,817,305.
McNeil Laboratories, Inc.: *See—*
Paragamian, Vasken, 3,818,038.
Paragamian, Vasken, 3,818,039.
McWaters, Talmadge W., to Monsanto Compnay. Friction twist tangling of yarns. 3,816,993, Cl. 57-157.00r.
Mead Corporation, The: *See—*
Leys, Marinus; and Van Den Houte, 3,817,442.
Taylor, Richard P., 3,817,502.
Mead, Ralph T.: *See—*
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MECBAR S.p.A.: *See—*
Barrera, Giorgio, 3,817,295.
Medney, Jonas. Pipe scarfing tool. 3,817,649, Cl. 408-211.000.
Medtronic, Inc.: *See—*
Bolduc, Lee R., 3,817,237.
Maurer, Donald D., 3,817,252.
Maurer, Donald D., 3,817,254.
Meier, Gunter, to Pfaff Haushallmaschinen GmbH. Foot for the sewing of blind stiches on sewing machines. 3,817,195, Cl. 112-235.000.
Meier, Jean: *See—*
Allais, Andre; Lilas, Les; and Meier, Jean, 3,818,090.
Meiners, Elmo R., to M & W Gear Company. Oil pan for tractors. 3,817,354, Cl. 184-104.00b.
Meissinger, Hans F.: *See—*
Berks, William I.; and Meissinger, Hans F., 3,817,481.
Melchior Armstrong Dessau, Inc.: *See—*
Connelly, Daniel Joseph; Reuter, George Henry; and Rudy, James A., 3,817,052.
Melmoth, Robert B.: *See—*
Hauser, Gotz S.; and Melmoth, Robert B., 3,817,069.
Menikheim, Virginia C., to Monsanto Company. Process for treating acrylic fibers to obtain carbonizable and graphitizable substrates. 3,817,700, Cl. 8-115.500.
Merbold, Peter; Morgenstern, Helmut; Nietsch, Alfred; Posselt, Heinz; and Scheunchen, Gerhard, to Veb Polygraph Leipzing, Kobinat fur Polygraphische Meschinen und Ausrustungen. Diagonal register adjustment of plate cylinder and applicator rolls in a rotaryprinting machine. 3,817,173, Cl. 101-218.000.
Mercier, Bernard M.; and Serrano, Francisco de A. M., to Subsea Equipment Associates Limited. Method of connecting underwater installations. 3,817,412, Cl. 214-152.000.
Merck & Co. Inc.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,818,014.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
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Merck Sharp & Dohme (I.A.) Corporation: *See—*
Belanger, Patrice; and Luke, Michael O., 3,818,061.
Merker, Steven L.: *See—*
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Merkl, Ernst: *See—*
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Merkley, Joseph H.: *See—*
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Merlin Gerin Societe Anonyme: *See—*
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Merrit, Paul H.: *See—*
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Merser, Francis G.; and Kooistra, Philip A., to Dennison Manufacturing Company. Filamentary string fastener. 3,816,879, Cl. 24-16.0pb.
Messer, Mayer Naoum: *See—*
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Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
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Mestetsky, Thomas S., to GAF Corporation. Adhesive stick comprising an alkylated N-vinylpyrrolidone polymer. 3,817,887, Cl. 260-23.00r.
Mesure, Georges M.: *See—*
Carnewal, Jose A. C. L.; Decruyenare, Trudo M. J.; and Mesure, Georges M., 3,816,981.
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Schmizler, Albrecht; and Dieser, Herman, 3,817,115.
Meyer, Friedrich-Wilhelm. Roll gap and gap error monitoring device. 3,817,068, Cl. 72-21.000.
Meyer, Hans Rudolf; and Siegrist, Adolf Emil, to Ciba-Geigy AG. Benzoxazolyl derivatives, processes for their manufacture and their use. 3,817,991, Cl. 260-240.00b.
Meyer, Jerome W.; and Annen, Phillip A., to Singer Company, The. Multi-intersection traffic control system. 3,818,429, Cl. 340-35.000.
Meyer, Robert W., to Ultrasonic Systems, Inc. Ultrasonic sewing. 3,817,802, Cl. 156-73.000.
Meynier, Maurice J., III, to Cameron Iron Works, Inc. Ram-type blowout preventer. 3,817,326, Cl. 166-55.000.
MHK Spring Co., Ltd.: *See—*
Shibata, Masaharu; and Sato, Kunio, 3,816,862.
Miaskoff, Leonard; and Reed, David A., to Harris-Intertype Corporation. Apparatus for making books. 3,816,866, Cl. 11-3.000.
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Michel, Bernard; and Delaney, Arthur Allison. Apparatus for removing particulate matter. 3,817,383, Cl. 210-170.000.
Michel, Frank, to Pfizer Inc. Coring tester for elastomer. 3,817,090, Cl. 73-81.000.
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Lee, Barry T.; Wimmer, Gunther W.; and Hyatt, Gilbert P. (said Lee and said Wimmer assors. to), 3,818,496.
Mikkelson, Vernon E. Portable stile. 3,817,351, Cl. 182-190.000.
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Miller, Gordon H., to Texaco Inc. Reinforced curable polymeric triazine compositions. 3,817,885, Cl. 260-9.000.
Miller, Gordon H., to Texaco Inc. Nitrile trimerization process. 3,818,005, Cl. 260-248.0cs.
Miller, Harold C., to Super-Cut, Inc. Drill shank and chuck assembly for a drill press. 3,817,648, Cl. 408-59.000.
Miller, Harry B., to Industrie-Werke Karlsruhe Augsburg AG. Winder traverse for filamentary material. 3,817,465, Cl. 242-43.000.
Miller, James R., to General Tire & Rubber Company, The. Returnable carton. 3,817,443, Cl. 229-41.00r.
Miller, Matthew S.; and Harhen, Paul F., to Saga Laboratories, Inc. Microwave cooking apparatus. 3,818,171, Cl. 219-10.550.
Miller, Melville Wallace: *See—*
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Miller Printing Machinery Co.: *See—*
Lenoir, Franz N.; and Van Gyseghem, Jean, 3,817,122.
Mills, Kenneth N. Oil level control system having high temperature actuated shut-off valves. 3,817,353, Cl. 184-6.400.
Mills, Marjorie L. Portable douching device. 3,817,247, Cl. 128-229.000.
Milprint, Inc.: *See—*
Neff, Robert O.; Morrison, Kenneth V.; and Groechel, William D., 3,817,427.
Milton, James E.: *See—*
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Minnesota Mining & Manufacturing Company: *See—*
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Minster Machine Company, The: *See—*
Voorhees, John E.; and Carabbio, Robert M., 3,817,067.
Mischke, Arthur, to Daimler-Benz Aktiengesellschaft. Thermostatically controlled valve especially for engines of motor vehicles. 3,817,450, Cl. 236-34.500.
Mistopoulos, Chris, Jr., to Ford Motor Company. Power operated window regulator mechanism. 3,816,961, Cl. 49-103.000.
Mitchell, Harry R.: *See—*
Bubniak, William C.; Huellmantel, Louis W.; and Mitchell, Harry R., 3,817,099.
Mitoff, Stephan P., to General Electric Company. Sealed primary sodium iodine battery. 3,817,790, Cl. 136-83.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Asano, Tetsumasa; Takamiya, Hiroshi; and Morimoto, Yoshinobu, 3,817,344.
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Petrochemical Company Limited: *See—*
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Miura, Konoe: *See—*
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Miya, Masami; Yarita, Hidetoshi; and Atsuzaka, Hirotaka, to Neppon Kabushiki Kaisha. Low frequency signal transmission and indicating system. 3,818,345, Cl. 325-53.000.
Miyake, Hiroyuki, to Kabushiki Kaisha Meidensha. Operating system for electrically driven vehicles. 3,818,291, Cl. 318-139.000.
Miyamats, Hiroki: *See—*
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Mizobe, Takahiko: *See—*
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Mizuno, Kiyohiko: *See—*
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Mizutani, Hirohiko; Morimiya, Osami; and Soma, Shigeo, to Tokyo Shibaura Electric Company, Ltd. Vacuum type electric circuit breaker. 3,818,164, Cl. 200-144.00b.
Mizutani, Takayuki; and Matsumi, Kouichi, to Nippon Electric Company, Limited. Apparatus for producing crystal. 3,817,710, Cl. 23-273.0sp.
Mobil Oil Corporation: *See—*
Celani, Pasquale J., 3,817,280.
Harrell, John W.; Patton, Bobbie J.; and Sexton, James H., 3,818,319.
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Grossmann, Gunter; Huber, Josef; Moder, Hans-Ulrich; Schaffer, Bernhard; Lenz, Ulrich; Petersen, Joachim; and Rabold, Jurgen, 3,818,199.
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Moleyre, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,818,000.
Molina, Alfonso P. Rack for making coffee. 3,817,482, Cl. 248-94.000.
Moller, Jens L.; and Ruekberg, Herbert S., to Continental Can Company, Inc. Latch to secure a closure on a container. 3,817,419, Cl. 220-59.000.
Molnar, Alexander: *See—*
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Monajjem, Fred, to General Tire and Rubber Company, The. Harmonic composite grinding of tires. 3,817,003, Cl. 51-281.000.
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Monroe, Gerald M.; and Von Bose, Robert J., to Boeing Company, The. Treadle switch. 3,818,162, Cl. 200-86.00r.
Monsanto Company: *See—*
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Monsanto Compnay: *See—*
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Montgomery, Richard C.; and Stoltz, Jacque R., to Mobil Oil Corporation. Well monitoring apparatus. 3,817,094, Cl. 73-151.000.
Montres Rolex S.A.: *See—*
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Mooney, Joseph R. Apparatus for detecting and indicating leaks in a fluid system. 3,817,087, Cl. 73-40.50r.
Moore, Carl, to Dow Chemical Company, The. Inhibiting discoloration of vinylidene chloride polymers. 3,817,895, Cl. 260-29.6mn.
Moore, Richard F.; and Schiller, Frederick C., to National Cash Register Company, The. Woven fabric printing ribbon having rupturable microcapsules bonded to its surface. 3,817,773, Cl. 117-36.100.
Moore, Robert G., to Hickman Developments, Inc. Tandem axle vehicle suspension. 3,817,551, Cl. 280-104.50a.
Moran, Richard J.: *See—*
Brown, Alfred W.; and Moran, Richard J., 3,817,211.
Moran, Robert L. Automatic television programmer. 3,818,352, Cl. 325-396.000.
Morenar S.A.: *See—*
Chiesa, Luigi, 3,818,497.
Morgan Construction Company: *See—*
Valve, Karl-Heinz, 3,817,072.
Morgan, John Edward; Schlueter, David Frederick; and Seymour, Lonnie Ray, to Illinois Tool Works, Inc. Drum assembly for container carrier machine. 3,816,968, Cl. 53-48.000.
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Mori, Kenjiro: *See—*
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Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train arrangements. 3,817,124, Cl. 74-759.000.
Mori, Yoichi; and Ichimura, Hirohisa, to Nissan Motor Company, Limited. Torque converter with throttle controlled fluid clutch. 3,817,357, Cl. 192-3.330.
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Moriyama, Hiroaki; Yamamoto, Hisao; Inaba, Shigoho; and Nagata, Hideo, to Sumitomo Chemical Company, Ltd. Process for producing benzodiazepine derivatives. 3,817,984, Cl. 260-239.0bd.

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Morrison, Bradley W., to Ogilvie Flour Mills Company Limited, The. Zero fermentation bread process. 3,818,108, Cl. 426-25.000.

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Morski, Raymond; and Podrecca, Michael J., to International Detroit Industries, Inc. Pull post with variable anchoring means. 3,817,081, Cl. 72-462.000.

Morton-Norwick Products Inc., mesne: *See*—
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Mosciatti, Roger; Foley, Thomas P.; and Buyaskas, John J., to Bucode, Inc. Self-positioning reel latching hub. 3,817,469, Cl. 242-68.300.

Mosehauer, Michael. Pool covers. 3,816,859, Cl. 4-172.120.

Moser, Hans; and Vogel, Christian, to Ciba-Geigy Corporation. Substituted 1-phenyl-2,5-dioxo imidazolidines. 3,818,032, Cl. 260-309.500.

Moss, Theron V. Scrubbing or buffing device impregnated with abrasive and method of making same. 3,817,004, Cl. 51-400.000.

Mosterd, Jacob Hendrik. Device for packing poultry. 3,817,167, Cl. 99-485.000.

Motan Gesellschaft mit beschrankter Haftung: *See*—
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Mott, George E.; and Skaggs, Robert L., to Texaco Inc. Laterally reinforced subterranean conduit for deep waters. 3,817,325, Cl. 166-.500.

Mouri, Mineju; and Aoki, Katsuhiko, to Fuji Electric Company Limited. Displacement electric signal converter. 3,818,401, Cl. 336-87.000.

Mouw, Robert B., to Aertech. Hybrid junction and mixer or modulator. 3,818,385, Cl. 333-26.000.

Moy, David; and Caldwell, William M., Jr., to Cities Service Oil Company. Organic smoke suppressant additive and distillate hydrocarbon fuel compositions containing same. 3,817,720, Cl. 44-56.000.

Moyer, Robert Holden, to Du Pont de Nemours, E. I., and Company. Oil and water repellent. 3,817,958, Cl. 260-86.700.

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MTD Products Inc.: *See*—
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Mudge, John L.; Zimmer, Jerry W.; and Taft, Keith G., to Raytheon Company. Semiconductor integrated circuit structures. 3,818,289, Cl. 357-49.000.

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Mueller-Tamm, Heinz; Frielingsdorf, Hans; Nickl, Johann; and Kolk, Erich, to Baidsche Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of particulate polyethylene. 3,817,970, Cl. 260-94.0da.

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Muilwijk, Dirk, to U.S. Philips Corporation. System for transmitting information pulses. 3,818,344, Cl. 325-30.000.

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Muller, Rudolf: *See*—
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Muller, Walter: *See*—
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Muller-Berner, Alfred H., to Daimler-Benz Aktiengesellschaft. Synchronizing installation for change-speed transmissions. 3,817,121, Cl. 74-645.000.

Mundy, Anthony Charles, to Elliott Brothers (London) Limited. Display unit mounting means. 3,817,484, Cl. 248-278.000.

Munich, Karl Jirka, to Kunststoffwerk Gebrueder Anger GmbH & Co. Cable connector box. 3,818,124, Cl. 174-93.000.

Murase, Sigeru, to Tokyo Netsushori Kogyo Kabushiki Kaisha. Fluid control apparatus. 3,817,658, Cl. 417-2.000.

Murata Manufacturing Co., Ltd.: *See*—
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Murman, Fernando: *See*—
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Murphy, James J. Current gain filter. 3,818,387, Cl. 333-70.00r.

Murray, Daniel Allen: *See*—
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Murray, Marjorie Remus; and Murray, Daniel Allen. Personal pill reminder. 3,818,473, Cl. 340-309.100.

Muska, Allen V., to Airco, Inc. System for dispensing carbon dioxide. 3,817,045, Cl. 62-10.000.

Musolf, Martin C.: *See*—
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Mutsch, Edward L.: *See*—
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Nadobnikov, Mikhail Nikolaevich: *See*—
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Nagahiro, Michinori; and Nakata, Yoshinobu, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing system of autothreading type. 3,817,437, Cl. 226-91.000.

Nagao, Taku: *See*—
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Nagashima, Shinichiro, to Canon Camera Kabushiki Kaisha. Emulsion liquid developer for electrostatic images. 3,817,867, Cl. 252-62.100.

Nagata, Hideo: *See*—
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Nagata, Morisue: *See*—
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Nagumo, Shin-Ichi: *See*—
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Nagy, Ernest J., to Pullman Incorporated. Door actuating mechanism for laterally movable and slidable door. 3,816,965, Cl. 49-281.000.

Nakabayashi, Masahiro; and Valle, Rafael Maytin, to Union Carbide Corporation. Gas shielded core wire electrode. 3,818,178, Cl. 219-146.060.

Nakagami, Ichiro: *See*—
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Nakagome, Yukio; Teramura, Hiroichi; Fukata, Yasuo; Mori, Hiromichi; and Sugita, Shoichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Control system of an electronic exchange and a common channel signal controller for an electric exchange. 3,818,450, Cl. 34-147.00r.

Nakajima, Hiromichi: *See*—
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Nakajima, Koichi. Connecting means for connecting relatively soft parts of a doll. 3,816,957, Cl. 46-173.000.

Nakajima, Yasuo; Yoshimura, Toru; and Nagumo, Shin-Ichi, to Nissan Motor Company, Limited. Method and apparatus for reducing toxic compounds in exhaust gases for combustion type power plant. 3,817,232, Cl. 123-119.00a.

Nakamura, Keiiti: *See—*
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Nakamura, Tsutomu; and Morihisa, Mitsuo, to Sharp Kabushiki Kaisha. Power supply circuit for electronic digital system. 3,818,484, Cl. 340-324.00r.
Nakanishi, Tadayoshi. Article of clothing convertible to a handbag. 3,818,158, Cl. 2-48.000.
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Nakashima, Tatsunari; and Ohta, Susumu, to Yokogawa Electric Works, Ltd. Barrier isolator device employing an overload protection circuit. 3,818,273, Cl. 317-22.000.
Nakashio, Seizo; Takemura, Toshio; Maruyama, Takashi; Ota, Kunio; and Seto, Tetsuki, to Sumitomo Chemical Company, Limited. Stabilization of polyphenylene oxides. 3,817,919, Cl. 260-47.0et.
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Nalle, George S., Jr. Plastic guard for protecting young trees, plants, and flowers. 3,816,959, Cl. 47-23.000.
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Needham, James C.; and Carter, Albert W., to Welding Institute, The. Arc welding. 3,818,177, Cl. 219-131.00r.
Neely, Allan B., Jr. Bale handling apparatus. 3,817,405, Cl. 214-6.00b.
Neff, Robert O.; Morrison, Kenneth V.; and Groechel, William D., to Milprint, Inc. Toothpaste tubes and similar tubular containers and methods for their manufacture. 3,817,427, Cl. 222-107.000.
Neidleman, Saul Lewis, to Squibb, E. R., & Sons, Inc. Process for the production of antimicrobial agents. 3,817,835, Cl. 195-80.00r.
Neil, Peter C., to Standard Oil Company. Transporting and trimmer apparatus for plastic film having thermoformed articles therein. 3,817,140, Cl. 83-635.000.
Neill, Donald E.: *See—*
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Neudecker, Karl; and Theer, Anton, to Agfa-Gevaert Aktiengesellschaft. Motion picture camera with adjustable shutter. 3,817,608, Cl. 352-78.00c.
Neuman, Charles H., to Chevron Research Company. Neutron absorption and oxygen log for measuring oil content of formation. 3,817,328, Cl. 166-250.000.
Neumann, Gerhard Max, to Delbag-Luftfilter GmbH. Air filter housing for filtering suspended substances. 3,816,984, Cl. 55-502.000.
Neumann, Herbert: *See—*
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Newman, John Leslie: *See—*
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Newton, George Charles; Westlake, Alfred Luigi; and Elphick, Frederick George Humphrey, to EMI Limited. Improvements in or relating to the production of disc records. 3,817,537, Cl. 274-46.00r.
Nicholson, Michael Kennedy, to Neuro Probe, Inc. Stereotaxic instrument. 3,817,249, Cl. 128-303.00b.
Nicholson, Terence Peter. Washers and gaskets. 3,817,540, Cl. 277-236.000.
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Mueller-Tamm, Heinz; Frielingsdorf, Hans; Nickl, Johann; and Kolk, Erich, 3,817,970.
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Niedballa, Ulrich: *See—*
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Niederdellmann, Georg; Bormann, Heinrich; Conrad, Horst; and Oertel, Gunter, to Bayer Aktiengesellschaft. Process for the preparation of high molecular weight hydroxypolyurethanes which are soluble in organic solvents. 3,817,933, Cl. 260-75.0ne.
Nienburg, Hans Juergen; Kniese, Wilhelm; Kummer, Rudolf; and Tavs, Peter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Dimethyl-ω-carboxyalkylphosphines and their alkyl esters. 3,818,057, Cl. 260-403.000.
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Niimi, Itaru; Kaneko, Yasuhisa; Morita, Akiyoshi; Nemoto, Yasuo; Sato, Mitsuyoshi; Suzuki, Hisami; and Watanabe, Naoyoshi, to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of sulphurizing steel mold parts and part produced thereby. 3,817,312, Cl. 164-72.000.
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Nissen, Ealter D.; and Hammond, Philip G., to Kimberly-Clark Corporation. Method of producing interfolded webs of flexible sheet material. 3,817,514, Cl. 270-40.000.
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Nohira, Hidetaka; and Tomita, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Device for disposal of liquid of condensation in exhaust gases. 3,817,221, Cl. 123-25.000.
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Nomiya, Kosei; and Tsuiki, Takao, to Hitachi, Ltd. Key input circuit system for electronic apparatus. 3,818,441, Cl. 340-146.1ab.
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Nyman, Bengt E. Motorcycle trailer. 3,817,556, Cl. 280-400.000.
Oberth, Adolf E.; and Bruenner, Rolf S., to United States of America, Air Force. Curing system for carboxy terminated polybutadiene propellants. 3,817,945, Cl. 260-78.40d.
O'Brien, Gerard J. Portable voice message generator. 3,818,147, Cl. 179-100-40r.
Occidental Petroleum Corporation: *See*—
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Odajima, Hiromichi: *See*—
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Odams, Charles E., to American Standard Inc., mesne. Pulse-operated receiver. 3,818,477, Cl. 343-105.0ls.
O'Dell, Leonard J., to American Air Filter Company, Inc. Filter arrangement. 3,816,978, Cl. 55-96.000.
Odman, Tor Axel, to Aktiebolaget Tudor. Apparatus for arranging and soldering together sets for lead accumulators. 3,816,898, Cl. 29-204.000.
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Okamoto, Atsutoshi; and Sugiura, Akio, to Nippondenso Co. Ltd. Checking system for vehicle equipments. 3,818,433, Cl. 340-53.000.
Okamoto, Eisaku, to Nippon Gakki Seizo Kabushiki Kaisha. Group teaching system for musical instruments. 3,817,144, Cl. 84-470.000.
Okamoto, Keiichi: *See*—
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Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Device for causing a tremolo or like effect in an electronic keyboard musical instrument. 3,818,114, Cl. 84-1.250.
Okazaki, Nobuo: *See*—
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Okugawa, Katuo: *See*—
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Olson, Earl H.; and Traumann, Klaus F., to Du Pont de Nemours, E. I., and Company. Crimpable composite polycarbonamide filament. 3,817,823, Cl. 161-173.000.
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Onal, Hasan F., to Hydro Jet Pumps, Inc. Centrifugal pump apparatus. 3,817,653, Cl. 415-74.000.
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O'Neill, Cormac G., to Physics International Company. Fuel injection and control system. 3,817,231, Cl. 123-119.00r.
Onishi, Shigeru. Two-cycle internal combustion engine. 3,817,227, Cl. 123-73.00a.
Opderbeck, Rudolph G., to Wacker Corporation. Vibration generator. 3,817,646, Cl. 404-133.000.
Orain, Michel, to Societe Anonyme: Glaenzer Spicer. Protective arrangement for a rotary power transmission coupling. 3,817,057, Cl. 64-32.00f.
Orban, Jean: *See*—
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Orth, Charles D., to Controls Company of America. Refrigerating system including flow control valve. 3,817,053, Cl. 62-210.000.
Ortho Pharmaceutical Corporation: *See*—
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Hamilton, Billy Harold; Meszar, John Robert; Ostapiak, Roman; Schroeder, Robert Edward; and Untamo, Peter Pentti, 3,818,307.
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Palmberg, Paul W., to Physical Electronics Industries, Inc. Field termination plates for charged particle analyzers. 3,818,228, Cl. 250-305.000.
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Paragamian, Vasken, to McNeil Laboratories, Inc. Process for preparing 2-oxospiro[indoline-3,4'-thiochromans]. 3,818,039, Cl. 260-325.000.
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Parobek, Edward George, to Combustion Engineering, Inc. Rotary kiln for metal chip deoiling. 3,817,697, Cl. 432-105.000.
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Paule, Kurt; and Schadlich, Fritz, to Bosch, Robert, G.m.b.H. Motor arrangement. 3,818,299, Cl. 318-353.000.
Pauli, Otto: *See—*
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Paulson, Harold E. Printing press cylinder release system. 3,817,174, Cl. 101-218.000.
Paulus, Wilfried; and Pauli, Otto, to Bayer Aktiengesellschaft. Antimicrobial textile materials. 3,817,702, Cl. 8-120.000.
Pauly, David R.: *See—*
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Peasnall, Leonard Charles, to Agricultural Utilities (Machinery) Limited. Apparatus for dispensing predetermined quantities of material into containers. 3,817,340, Cl. 177-90.000.
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Peel, Billy J.: *See—*
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Pei, Yu K., to Owens-Illinois, Inc. Method of making glass-ceramic pump parts. 3,817,732, Cl. 65-33.000.
Peilstocker, Gunter: *See—*
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Pekau, Dietlind; and Diehl, Reiner, to Siemens Aktiengesellschaft. Process for recording acoustic, synthetic and microwave holograms. 3,818,427, Cl. 340-5.00h.
Pellinat, Werner Karl, to International Business Machines Corporation. Method and apparatus for controlling a continuous casting machine. 3,817,311, Cl. 164-4.000.
Pelly, Brian R.: *See—*
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Peltonen, Lahja Arvid, to Valmet Oy. Lateral container grabber having carrying pins at the lower corners of the container. 3,817,414, Cl. 214-621.000.
Peltz, Guenter, to ITT Industries, Inc. Ignition circuit for lamps. 3,818,268, Cl. 315-244.000.
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Robinson, Donald Nellis, 3,817,951.
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Peprah, Ignatius K.: *See—*
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Perfect Equipment Corporation: *See—*
Carter, Warren E.; and Songer, Hubert D., 3,817,640.
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Perkin-Elmer Corporation, The: *See—*
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Perrine, Walter E. Exercising apparatus. 3,817,243, Cl. 128-57.000.
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Person, Donald, Jr. Mechanical compass bearing attachment for binoculars and the like with compass card clamping means. 3,816,936, Cl. 33-355.000.
Persson, Per-Anders; and Lithner, Gosta, to Nitro Nobel AB. Detonating cap. 3,817,181, Cl. 102-29.000.
Persson, Sten I., to Quality Corporation, The. Thermally compensated crystal unit. 3,818,254, Cl. 310-8.100.
Pertuit, John R. Electric cable connector. 3,818,422, Cl. 339-202.000.
Peters, Clifford M. In-line test valve. 3,817,282, Cl. 137-607.000.
Petersen, Joachim: *See—*
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Petersen, Ross K. Shield assembly. 3,817,310, Cl. 160-405.000.
Petersen, Svend Aage, to Johns-Manville Corporation. Binder applicator movable support apparatus and method. 3,817,728, Cl. 65-3.000.
Peterson, Carl R.: *See—*
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Peynaud, Francois; and Posseme, Gilles, to Thomson-CSF. Navigation systems utilising the doppler effect. 3,818,425, Cl. 340-3.00r.
Pfaff Haushallmaschinen GmbH: *See—*
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Pfarrwaller, Erwin, to Sulzer Brothers Ltd. Chain drive with idler wheel tensioning means biased by elongated pads. 3,817,113, Cl. 74-242.10r.
Pfeifer, Josef: *See—*
Maier, Albert; Pfeifer, Josef; and Ambraschka, Kasimir, 3,817,612.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex Corporation. Alkenyl and alkynyl substituted xanthone carboxylic acid compounds. 3,818,040, Cl. 260-335.000.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc., mesne. Xanthone carboxylic acids and derivatives. 3,818,042, Cl. 260-335.000.
Pfizer Inc.: *See—*
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Philco-Ford Corporation: *See—*
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Phillips, Brian L.: *See—*
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Fahey, Darryl R., 3,818,063.
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Jones, Faber B.; and Marrs, Oren L., 3,817,936.

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Phipps, Andrew J.; and Howell, Donald C. Safety light. 3,818,428, Cl. 340-29.000.

Physical Electronics Industries, Inc.: *See—*
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Physics International Company: *See—*
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Piccolo, Adrian; and Turner, Arthur, to Baird-Atomic, Inc. Computerized spectrometer system. 3,818,197, Cl. 235-151.300.

Pickens, Robert C., Jr.; Martino, Louis D.; and Kimmel, Richard, to Ozite Corporation. Needlebonded secondary backing for carpeting. 3,817,817, Cl. 161-67.000.

Picunko, Thomas; and Stewart, Marvin C., to Union Carbide Corporation. Digital subtraction circuit for a centrifugal chemical analyzer of the rotating spectrophotometer type. 3,817,632, Cl. 356-39.000.

Piempel, Manfred: *See—*
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Pierdet, Andre; and Bonne, Claude, to Roussel Uclaf. 11α-Alkoxylated steroids, process and therapeutic method. 3,818,056, Cl. 260-397.450.

Pierle, Willy R. J.: *See—*
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Piggott, David C., to Poly-Converters Limited. Method and apparatus for filtering flowable material. 3,817,377, Cl. 210-76.000.

Pilhofer, Theo. Method for measuring the size of the disperse elements in a fluid immiscible two-phase system. 3,818,200, Cl. 235-151.300.

Pilkington Brothers Limited: *See—*
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Pinckaers, B. Hubert, to Honeywell Inc. Solid state thermostat with droop compensation. 3,817,453, Cl. 236-68.00c.

Pinezich, John R.: *See—*
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Pioneer Magnetics, Inc.: *See—*
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Pira, Edward S. Method and apparatus for subsurface and drip irrigation systems. 3,817,454, Cl. 239-76.000.

Pitkjaan, Elam, to Westinghouse Electric Corporation. Vehicular road-lighting system having a headlamp with a dual-segment reflector. 3,818,210, Cl. 240-7.10a.

Pitney-Bowes, Inc.: *See—*
Connell, Richard Allen, 3,818,444.
Tramposch, Herbert; and Hubbard, David W., 3,817,367.

Pittman, Paul F., to Westinghouse Electric Corporation. Serially connected semiconductor switching devices selectively connected for predetermined voltage blocking and rapid switching. 3,818,248, Cl. 307-258.000.

Plessey Handel und investments A.G.: *See—*
Davies, Terrence Ardern; and Quarmby, Raymond Barber, 3,818,414.
Hilton, John Leslie; and Faulkner, Arthur Maathorpe, 3,818,121.

Pluequet, Heinz; and Reske, Armin, to Klockner-Humboldt-Deutz Aktiengesellschaft. Device for continuously controlling a speed-dependent factor. 3,817,224, Cl. 123-41.150.

Pochinok, Galina Panteleimonovna: *See—*
Tjutjunnikow, Anatoly Borisovich; Shporkhun, Vitaly Ivanovich; Marchenko, Alexandr Nikolaevich; Pochinok, Galina Panteleimonovna; and Krivorotchenko, Erik Mikhailovich, 3,817,501.

Podkletnov, Evgeny Nikolaevich. Method and device for drying enamel slip on inner surfaces of pipes. 3,816,938, Cl. 34-1.000.

Podrecca, Michael J.: *See—*
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Polaroid Corporation: *See—*
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Ponder & Best, Inc.: *See—*
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Poot, Albert Lucien: *See—*
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Poppelreiter, Joseph C., II, to Kubik Hydradrives, Inc. Electrical phase monitoring circuit. 3,818,240, Cl. 307-127.000.

Poppinger, Herbert; and Reger, Gottfried, to Siemens Aktiengesellschaft. Apparatus and method for control of single-phase A-C motors. 3,818,295, Cl. 318-207.00b.

Pornin, Rene: *See—*
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Porter, John H.; Krebs, William A.; Stevens, Jackie D.; and Dobbin, Robert G., to Ametek, Inc. Rotary armature for a rotary dynamoelectric machine. 3,818,257, Cl. 310-179.000.

Portescap: *See—*
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Portnoy, Harold D. Means for cutting nerve tissue. 3,816,919, Cl. 30-124.000.

Posselt, Heinz: *See—*
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Post Office, The: *See—*
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Pourbaix, Marcel, to Centre Belge d'Etude de la Corrosion. Process for treating a metal or alloy, by means of an electrolyte. 3,817,795, Cl. 148-6.14r.

Pownall, Francis Anthony. Ship slipping system. 3,817,041, Cl. 61-67.000.

Precision Control Products Corporation: *See—*
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Pressentey, Shelley M. Joystick type controller for switches. 3,818,154, Cl. 200-6.00a.

Price, Peter: *See—*
United States of America, National Aeronautics and Space Adminstration, 3,817,082.

Priegel, Jack C. Electronic carburetion system for low exhaust emissions of internal combustion engines. 3,817,225, Cl. 123-32.0ea.

Priester, Jack E. Spreading tool for restoring the shape of annular product. 3,817,079, Cl. 72-392.000.

Principe, Andrew H.; and Glynn, Emmett P., to Cand-Aire Industries, Inc. Gas sampling apparatus and method. 3,817,108, Cl. 73-421.50r.

Procter & Gamble Company, The: *See—*
Ries, Charles R.; and Smith, George C., Jr., 3,817,869.

Production Technology Inc.: *See—*
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Prudential Lighting Corporation: *See—*
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Puddington, Ira E.: *See—*
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Puente, John G., to Communications Satellite Corporation. Unique word detection in digital burst communication systems. 3,818,348, Cl. 325-324.000.

Pullman Incorporated: *See—*
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Pure Co., Inc., The: *See—*
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Quality Corporation, The: *See—*
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Quarmby, Raymond Barber: *See—*
Davies, Terrence Ardern; and Quarmby, Raymond Barber, 3,818,414.

Quittner, Leonard M. Simulated log burner. 3,817,686, Cl. 431-125.000.

Raab, Owen E. Apparatus for constructing studded wooden walls. 3,817,438, Cl. 227-152.000.

Rabenhorst, Helmut: *See—*
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Rabinovich, Esfir Salimanovna: *See—*
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Rabodzei, Nikolai; Ljubimov, Evgeny Mikhailovich; Nadobnikov, Mikhail Nikolaevich; and Krokhin, Alexandr Alexandrovich. X-ray television measuring microscope. 3,818,233, Cl. 250-444.000.

Rabold, Jurgen: *See—*
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Radcliffe, Arthur J., Jr., to Burroughs Corporation. Signature verification by zero-crossing characterization. 3,818,443, Cl. 340-146.3sy.

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Ragan, Robert O. Sectional canoe. 3,816,865, Cl. 9-2.00s.

Raitt, Edward D. Hard ice cream dispensing machine. 3,817,422, Cl. 221-74.000.

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Ramge, Dennis Lee, to Johns-Manville Corporation. Solute dissolving apparatus having solution chamber with solution circulation means. 3,817,709, Cl. 23-267.00e.

Ramsay, James Frederick. Variable ration friction drive speed changers. 3,817,112, Cl. 74-201.000.

Ramsey, Robert W., to Heil Quaker Corporation. Air conditioner condensing system control. 3,817,451, Cl. 236-49.000.
Randel, Mortimer A. Lock device for securing an apertured member. 3,817,062, Cl. 70-11.000.
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Randolph, Hollis L.; McIntosh, Harold A.; and Teichert, Allen Lee, to Robertshaw Controls Company. Cam actuated multiple contact switching device. 3,818,405, Cl. 337-141.000.
Rankin, Malcolm R., to Witco Chemical Corporation. Process for petroleum recovery utilizing miscible fluids. 3,817,329, Cl. 166-274.000.
Rannefeld, Clarence E. Panel support braket. 3,817,005, Cl. 52-753.00j.
Raphael, Steven M., to United States of America, Navy. Super stable superconducting coil. 3,818,396, Cl. 335-216.000.
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Rasch, Milton A.: *See—*
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Rather, James B., Jr., to Schoolhouse Enterprises Ltd. Pompon making apparatus. 3,816,888, Cl. 28-2.000.
Raymer, Paul. Message edged pad. 3,817,492, Cl. 253-63.000.
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Reed, Robert D.; and Schwartz, Robert E., to Zink, John, Company. Airductor flare. 3,817,695, Cl. 431-202.000.
Reed, Thomas M., to PCR, Inc. Process for purifying bromochlorotrifluoroethane by azeotropic distillation. 3,817,842, Cl. 203-58.000.
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Regel, Erik; Buchel, Karl Heinz; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Bayer Aktiengesellschaft. Imidazolyl-ketoximecarbamates. 3,818,029, Cl. 260-309.000.
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Reimer, William A., to GTE Automatic Electric Laboratories, Incorporated. Device for solderless conntction of electrical components to printed wiring cards. 3,818,416, Cl. 339-17.0cf.
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Reyner, Emerson Marshall, II; and Boger, Jerry Hench. Low attenuation flat flexible cable. 3,818,117, Cl. 174-36.000.
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Ribback, Erich. Machine for non-cutting forming of metals. 3,817,070, Cl. 72-76.000.
Ricahrdson, Donald. Braider carrier. 3,817,147, Cl. 87-57.000.
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Rich, Charles M., to Akzona Incorporated. Yarn driven friction falsetwister. 3,816,989, Cl. 57-34.0hs.
Rich, Gerald C., to Rich Laboratories, Inc. Automatic switching and short circuit protection circuit. 3,818,272, Cl. 317-20.000.
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Richter, Sidney B.; and Levin, Alfred A., to Velsicol Chemical Corporation. Fungicidal compositions and method of combatting fungi using substituted tetrahydroquinolines and tetrahydroisoquinolines. 3,818,010, Cl. 424-258.000.
Ricoh Co., Ltd.: *See—*
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Riester, William C., to Trico Products Corporation. Windshield wiper blade. 3,816,870, Cl. 15-250.420.
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Riley, Robert E.; and Gabler, James H. Microfiche duplicating means. 3,817,618, Cl. 355-100.000.
Ringwall, Carl Gustave, to General Electric Company. Gain changer for angle-of-attack/attitude fluidic flight control system. 3,817,480, Cl. 244-78.000.
Rist, Michel, to Societe Anonyme Francaise du Ferado. Torsion damping device. 3,817,362, Cl. 192-106.100.
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Robinson, David Peter: *See*—
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Robinson, Donald Nellis, to Pennwalt Corporation. Low-modulus thermoplastic ethylene-tetrafluoroethylene-hexafluoropropene terpolymers. 3,817,951, Cl. 260-80.770.
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Ronan, Charles R.; and Stevens, Earl S., to Rohr Industries, Inc. Method of forming core panels. 3,817,808, Cl. 156-291.000.
Ronan, Charles R.; and Stevens, Earl S., to Rohr Industries, Inc. Method of forming core panels. 3,817,810, Cl. 156-297.000.
Root, James R., to Ruskin Manufacturing Company. Control damper construction. 3,817,485, Cl. 248-300.000.
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Rosenstein, Allen B.; Stolowitz, Michael C.; and Wilkinson, Bruce L., to Pioneer Magnetics, Inc. Switched transistor power inverter circuit with saturable reactor current limiting means. 3,818,313, Cl. 321.045.00r.
Roslin, Victor Oscar, to Bell-Northern Research Ltd. Reduction of armature rebound in crossbar switch units. 3,818,397, Cl. 335-271.000.
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Ross, David S., to Hydro-Clear Corporation. Method and apparatus for filtering solids from a liquid effluent. 3,817,378, Cl. 210-80.000.
Rossel, Peter, to Siemens Aktiengesellschaft. Metric conversion device for numerical control of machine tools. 3,818,303, Cl. 318-603.000.
Rossendale Combining Company Limited, The: *See*—
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Routson, Eillis G. Magnetic amusement device. 3,817,518, Cl. 273-1.00m.
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Roven, Louis. Refrigeration by-pass and service valve. 3,817,271, Cl. 137-318.000.
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Saiki, Tomihei. Article supporting device. 3,817,394, Cl. 211-110.000.
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Saleh, Bahaa Botros Seedhom, to National Research Development Corporation. Knee joint prosthesis. 3,816,855, Cl. 3-1.000.
Sallee, Aaron D. Chain locking adaptor. 3,817,064, Cl. 70-58.000.
Salvatore, Frank. Knife sharpening apparatus. 3,817,001, Cl. 51-210.000.
Samsing, Rolf A., to Gillette Company, The. Shrink film cradle. 3,817,373, Cl. 206-432.000.
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Sanderson, Martin I. Seed planting implement. 3,817,042, Cl. 61-72.600.
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Sarto, Jorma O., to Chrysler Corporation. Exhaust recirculation. 3,817,230, Cl. 123-119.00a.
Sasse, Joachim, to Chemiebau, Dr. A. Zieren GmbH. Self-regulating acid circulation in the contact process. 3,818,088, Cl. 423-522.000.
Sastri, Aiyaswami Suryanarayan, to Gillette Company, The. Novel cutting edges and processes for making them. 3,816,920, Cl. 30-346.540.
Sato, Kunio: *See*—
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Sato, Ryozi; Chino, Yasuyoshi; and Endo, Tatus, to Japanese Geon Company, Ltd., The. Method of preventing the polymerization of unsaturated carboxylic caid. 3,818,079, Cl. 260-526.00n.
Saunders, Peter Charles; Revell, Dennis William; and Clarke, Terence James, to National Research Development Corporation. Road-usage meter. 3,818,193, Cl. 235-92.0fp.
Sause, Henry, Jr. Door closure assmebly. 3,816,966, Cl. 49-317.000.
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Sawada, Yuji; Takemoto, Katsumi; Marouka, Yasuro; and Kuroiwa, Masayuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Automatic storage system with stacker cranes and load handling dollies. 3,817,406, Cl. 214-16.40c.
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Schefczik, Ernst, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 3-Methylene-6-nitro-N-substituted isoindolones-(1). 3,818,037, Cl. 260-325.000.
Scheiter, Heinz: *See*—
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Schelle, Axel, to Knorr-Bremse KG. Spring element for automatic center head couplers of railroad vehicles. 3,817,400, Cl. 213-24.000.
Scheller, Paul: *See*—
Kiffe, Horst-Gregor; Scheller, Paul; and Hafner, Wolfgang, 3,816,929.
Schenk, Peter: *See*—
Dzus, Theodore, Sr.; and Schenk, Peter, 3,816,883.
Schering Aktiengesellschaft: *See*—
Vorbruggen Helmut; and Niedballa, Ulrich, 3,817,980.
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Sherlock, Margaret, 3,818,096.
Scheunchen, Gerhard: *See*—
Merbold, Peter; Morgenstern, Helmut; Nietsch, Alfred; Posselt, Heinz; and Scheunchen, Gerhard, 3,817,173.
Schexnayder, Lawrence F., to Caterpillar Tractor Company. Self-aligning relief valve. 3,817,276, Cl. 137-491.000.
Schiebenhofer, Harm: *See*—
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Schilke, David C.: *See*—
Stone, Robert L.; and Schilke, David C., 3,818,189.
Schilke, Peter W.; and Rigney, David V., to United Aircraft Corporation. High temperature abradable material and method of preparing the same. 3,817,719, Cl. 29-182.500.
Schiller, Frederick C.: *See*—
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Schilz, Wolfram, to U.S. Philips Corporation. Planar ferrite phase shifter for microwaves of increased bandwidth. 3,818,384, Cl. 333-24.100.
Schindler, Mark. High gain phase control circuit. 3,818,320, Cl. 323-20.000.
Schirneker, Hans-Ludwig. Cartridge feeding mechanism for firearms. 3,817,148, Cl. 89-155.000.
Schirtzinger, Joseph F., to Air Logistics Corporation. Landing craft for conveying dry cargo over ice. 3,817,199, Cl. 114-42.000.
Schittek, Freidrich. Device for indicating critical temperatures. 3,817,204, Cl. 116-114.00r.
Schlage, Ernest L., to Schlage Lock Company. Selective switch actuator. 3,818,239, Cl. 307-115.000.
Schlage Lock Company: *See*—
Schlage, Ernest L., 3,818,239.
Schlappkohl, Jorg. Fuel injection nozzle for internal combustion engines. 3,817,456, Cl. 239-533.000.
Schleberger, Franz: *See*—
Balwe, Thomas; Bauer, Johann; and Schleberger, Franz, 3,817,963.
Schlee, Richard: *See*—
Gebauer, Wolfgang; Schlee, Richard; and Zirngiebl, Eberhard, 3,817,846.
Schleifer, Klaus, to Buromaschinen, Walter, GmbH. Data processing unit having a digital readout indicator. 3,818,457, Cl. 340-172.500.
Schleimann-Jensen, Carl Arne, to Telefonaktiebolaget LM Ericsson. Gas-filled discharge tube for transient protection purposes. 3,818,259, Cl. 313-217.000.
Schlein, Allen P. Prosthesis for total arthroplasty of the elbow joint. 3,816,854, Cl. 3-1.000.
Schlienger, Max P. Arc furnace having consumable and non-consumable electrodes and method. 3,818,113, Cl. 13-9.000.
Schlosser, Karl, to Siemens AG. Testing and measuring system for determining the characteristics of a network over a variable frequency range. 3,818,331, Cl. 324-57.00r.
Schlosser, Karl, to Siemens AG. Testing system for measuring the characteristics of a network over a variable frequency range. 3,818,332, Cl. 324-57.00r.
Schlough, Thomas L. Block splitter. 3,817,236, Cl. 125-23.00c.
Schlueter, David Frederick: *See*—
Morgan, John Edward; Schlueter, David Frederick; and Seymour, Lonnie Ray, 3,816,968.
Schlumberger Technology Corporation: *See*—
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Schmidt, Gunter: *See*—
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Schmidt, Joachim; Merkl, Ernst; and Zillgitt, Ulrich, to Bosch, Robert, G.m.b.H. Sealed-beam headlight. 3,818,215, Cl. 240-41.00r.
Schmidt, Robert W., to Copar Corporation. Measurement system. 3,818,224, Cl. 250-231.0se.
Schmidt, William G.; Gabbard, Ova G.; Husted, John M.; and Maillet, Wilfrid G., to Communications Satellite Corporation. TDMA satellite communications system. 3,818,453, Cl. 340-172.500.
Schmitt, Dieter: *See*—
Stein, Alfred; Baumer, Wilhelm; and Schmitt, Dieter, 3,817,705.
Schmizler, Albrecht; and Dieser, Herman, to Metabowerke KG, Closs, Rauch & Schinizler. Transmission for electric sanders or the like. 3,817,115, Cl. 74-417.000.
Schneider, Walter. Garbage receptacle. 3,817,448, Cl. 232-43.200.
Schoellkopf, Ulrich; Gerhart, Fritz; Hoppe, Dieter; and Jentsch, Reinhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of aminoacid precursors. 3,818,065, Cl. 260-464.000.
Schon, Nikolaus; Pampus, Gottfried; Witte, Josef; and Theisen, Dieter, to Bayer Aktiengesellschaft. Preparation of polyalkenamers. 3,817,964, Cl. 260-93.100.
Schonfeld, Hans: *See*—
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Schoolhouse Enterprises Ltd.: *See*—
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Schott, Heinrich; and Huber, Martin. Apparatus for regulating a D.C. voltage. 3,818,318, Cl. 323-9.000.
Schott, Wayne M., to Zenith Radio Corporation. Four-channel front-to-back balance control. 3,818,136, Cl. 179-1.0gq.

Schroeder, Erich, to Grundig Elektro-Mechanische Versuchsanstalt Max Grundig. Portable sound recording and reproducing apparatus. 3,818,504, Cl. 360-96.000.

Schroeder, Guenter: *See*—
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Schroeder, Robert Edward: *See*—
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Schultz, Jay Ward; and McCarron, Russell Lawrence, to International Nickel Copany, Inc. Carburization resistant high temperature alloy. 3,817,747, Cl. 75-171.000.

Schultz, John E., to International Machine Products, Inc. Printing cylinder register control unit. 3,817,176, Cl. 101-248.000.

Schultz, Wolfgang: *See*—
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Schulz, Manfred B.: *See*—
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Schutze, Hans-Jurgen; and Hennings, Klaus, to Telefunken Patentverwaltungs-G.m.b.H. Production of circuit device. 3,817,799, Cl. 156-3.000.

Schwab, Louis. Electrostatic gas filters. 3,816,980, Cl. 55-123.000.

Schwartz, Robert E.: *See*—
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Schwarztrauber, Manfred: *See*—
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Schwendtner, Manfred: *See*—
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Schwoerer, Jerome L.: *See*—
Braun, Ralph V.; and Schwoerer, Jerome L., 3,817,807.

Scio Cabinet, Inc.: *See*—
Loy, George W., 3,817,814.

Scott, David Evarts; and Scott, Rae Nell. Protective cover for motor vehicle gear shift assembly lever. 3,817,119, Cl. 74-563.000.

Scott, James F., to Perolin Company, Inc., The. Compositions for inhibiting corrosion and ash deposition in fossil fuel burning equipment. 3,817,722, Cl. 44-76.000.

Scott, Leon S.: *See*—
Downing, Roland G.; Scott, Leon S.; and Seidel, William C., 3,818,067.

Scott Paper Company: *See*—
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Scott, Rae Nell: *See*—
Scott, David Evarts; and Scott, Rae Nell, 3,817,119.

Scott, Wilbert Milo. Bolt hold aligner and inserting tool. 3,817,146, Cl. 85-1.00p.

Scragg, William Ewert, to Cadborough Engineering Company Ltd. Effluent treatment. 3,817,848, Cl. 204-152.000.

Sealed Unit Parts Co., Inc.: *See*—
Ehrens, Henry; and Slocum, Charles W., 3,817,270.

Searcy, James A.; and Rasch, Milton A., to Hussmann Refrigerator Co. Air door for cooler or the like. 3,817,160, Cl. 98-36.000.

Searle, G. D., & Co.: *See*—
Baran, John Stanislaus; and Langford, Donna, 3,818,080.
Smith, Bruce G., 3,817,706.

Sears, Howard V. Method and apparatus for determination of ore sampling location. 3,817,336, Cl. 175-61.000.

Seaton, Thomas: *See*—
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Sebek, Oldrich K.: *See*—
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Sebens, Carl R.; and Russo, Albert J., to Perkin-Elmer Corporation, The. Safety interlock for burners. 3,817,693, Cl. 431-153.000.

Sebia S. A. Holding: *See*—
Beelen, Hilaire, 3,817,568.

Seebald, Francis Warren. Portable utility device for fluid processing of deleterious material. 3,817,194, Cl. 111-7.100.

Seefluth, Charles L., to Phillips Petroleum Company. Bead seal for oriented articles. 3,817,676, Cl. 425-387.00b.

Seefluth, Charles L., to Phillips Petroleum Company. Metal neck forming plug having polytetrafluorethylene shoulder. 3,817,677, Cl. 425-393.000.

Seeger, Richard E., Jr.; and Lynn, William J., to Chomerics, Inc. Electrical interconnection and contacting system. 3,818,279, Cl. 317-101.0cm.

Segar, Lawrence P.: *See*—
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Segawa, Michi: *See*—
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Segovia, Gilbert: *See*—
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Seidel, Siegfried, to Siemens Aktiengesellschaft. Contact bridge. 3,818,170, Cl. 200-165.000.

Seidel, William C.: *See*—
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Seiler, Nikolaus; Thobe, Josef; and Werner, Gottfried, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Arrangement for the optical evaluation of several simultaneously obtained specimens. 3,817,630, Cl. 356-244.000.

Sekiguchi, Toshio: *See*—
Yamato, Eisaku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, 3,818,015.

Sekula, Roseann. Article for catching insects. 3,816,956, Cl. 43-114.000.

Selby, David Adrian. Insulated concrete block. 3,817,013, Cl. 52-437.000.

Self Serv Fixture Co., Inc.: *See*—
LeFever, Romie L., 3,817,395.

Seliber, Joseph, to Pacific Lighting Service Co. Vacuum freezing, vapor compression apparatus. 3,817,051, Cl. 62-123.000.

Sell, James F. Latern igniter. 3,817,684, Cl. 431-104.000.

Semperit AG: *See*—
Kratochvil, Egon; and Hascic, Wladimir, 3,817,496.

Sendor, Bernard T.; and Sendor, Mortimer S. Welding apparatus for paper. 3,817,815, Cl. 156-583.000.

Sendor, Mortimer S.: *See*—
Sendor, Bernard T.; and Sendor, Mortimer S., 3,817,815.

Seneca Swamill Company: *See*—
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Senor, Ronald E.; and Trenkler, George, to Texas Instruments, Incorporated. Circuit breaker apparatus. 3,818,404, Cl. 337-85.000.

Senturion Sciences, Inc.: *See*—
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Sergeev, Andrei Ivanovich: *See*—
Balepin, Alexandr Alexeevich; Bobolev, Alexandr Vasilievich; Buslaev, Jury Alexandrovich; Chagin, Vladimir Ivanovich; Emanuel, Nikolai Markovich; and Sergeev, Andrei Ivanovich, 3,818,051.

Serrano, Francisco de A. M.: *See*—
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Seto, Tetsuki: *See*—
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Sexton, James H.: *See*—
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Seymour, Lonnie Ray: *See*—
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Shadley, Glen W., to Fedders Corporation. Pipe mounting clip arrangement. 3,817,688, Cl. 431-343.000.

Shalako International, Inc.: *See*—
Stearms, William P.; Blackledge, Vernon O.; and Rohrer, John S., 3,818,149.

Shamp, Donald E., to Libbey-Owens-Ford Company. Suspending device for side wall fenders. 3,817,734, Cl. 65-99.00a.

Shapiro, Nelson H.: *See*—
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Board, Richard G.; and Shapiro, Nelson H., 3,817,474.

Sharp Kabushiki Kaisha: *See*—
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Shaw, Fred D., Jr.: *See*—
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Shaw-Walker Company, The: *See*—
Anderson, Clarence A. F., 3,817,589.

Shea, Gerald A., to United States of Americ, Army. Combined temperature-humidity index computation kit. 3,817,102, Cl. 73-338.000.

Sheedy, Patrick T., administrator: *See*—
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Shell Oil Company: *See*—
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Shen, Chung Yu, to Monsanto Company. Detergent formulations. 3,817,863, Cl. 252-89.000.

Sheppard, William Arthur: *See*—
Cairncross, Allan; and Sheppard, William Arthur, 3,817,784.

Sherlock, Margaret, to Schering Corporation. Compositons of 1,2-dilower alkyl arylpyrazolium quternary salts and method of lowering blood sugar levels with same. 3,818,096, Cl. 424-273.000.

Sherwin-Williams Company, The: *See*—
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Sherwood Medical Industries, Inc.: *See*—
Weichselbaum, Theodore E., 3,817,389.

Shibata, Masaharu; and Sato, Kunio, to MHK Spring Co., Ltd. Seat. 3,816,862, Cl. 5-351.000.

Shimada, Satoshi; Kozuma, Taisaku; and Kimura, Ichiro, to Hitachi, Ltd. Semiconductor pressure transducer. 3,817,107, Cl. 73-398.0ar.

Shimadzu Seisakusho Ltd.: *See*—
Kita, Yasuo; and Hida, Jiro, 3,817,117.

Shimp, Alan B., to Westinghouse Electric Corporation. Circuit interrupter including improved trip circuit using current transformers. 3,818,275, Cl. 317-33.000.

Shinetsu Chemical Company: *See—*
Gomyo, Shiro; Tanaka, Yasuhisa; and Fujimura, Yoshio, 3,817,902.

Shirakawa, Takashi, to Alps Electric Co., Ltd. Variable condenser. 3,818,287, Cl 317-253.000.

Shirouchi, Yasunari; and Urade, Toshinori, to Fujitsu Limited. Display device utilizing gas discharge. 3,818,258, Cl. 313-188.000.

Shirzad, Paul P.; and Reidt, David L., to Foremark Corporation. Inflatable canopy. 3,816,867, Cl. 14-71.000.

Shishikura, Hirohisa: *See—*
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Short, Oliver Alton, to Du Pont de Nemours, E. I., and Company. Gold alloy metallizations for capacitor electrodes. 3,817,758, Cl. 106-1.000.

Shporkhun, Vitaly Ivanovich: *See—*
Tjutjunnikow, Anatoly Borisovich; Shporkhun, Vitaly Ivanovich; Marchenko, Alexandr Nikolaevich; Pochinok, Galina Panteleimonovna; and Krivorotchenko, Erik Mikhailovich, 3,817,501.

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Sidles, James, to Goodrich, B. F., Company, The. Mud resistant tire. 3,817,306, Cl. 152-209.00r.

Sieg, Robert P.; and White, Robert J., to Chevron Research Company. Gasification of solid waste material to obtain high BTU product gas. 3,817,725, Cl. 48-209.000.

Siegrist, Adolf Emil: *See—*
Meyer, Hans Rudolf; and Siegrist, Adolf Emil, 3,817,991.

Siegrist, Edouard, to Ed Wenger S.A. Fluid tight mounting of crystal in watch case. 3,817,025, Cl. 58-90.00r.

Siemens AG: *See—*
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Pekau, Dietlind; and Diehl, Reiner, 3,818,427.
Poppinger, Herbert; and Reger, Gottfried, 3,818,295.
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Silbiger, Jakob: *See—*
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Sill, Arthur D.; and Sweet, Francis W., to Richardson-Merrell Inc. Xanthene and thioxanthene derivatives. 3,817,992, Cl. 260-240.100.

Silver Lining, Inc.: *See—*
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Silverman, Daniel; and Johnson, Everett A. Authentication of access to information records. 3,818,190, Cl. 235-61.70r.

Simmons, Samuel P. Force focusing golf club. 3,817,522, Cl. 273-78.000.

Simon, Pierre: *See—*
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Simon-Hartley Limited: *See—*
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Simond, Jacques: *See—*
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Simonetti, Sergio G. Ultrasonically driven cutting knife and method and apparatus for cutting a soft yielding bakery product. 3,817,141, Cl. 83-651.000.

Simpson, C. Wayne: *See—*
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Sindelar, Emmett F., to Warner & Swasey Company, The. Multiplexed machine control apparatus. 3,818,301, Cl. 318-574.000.

Singeisen, Markus: *See—*
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SKF Industrial Trading and Development Company B.V.: *See—*
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Skinner, James R.; Uitz, Mark O.; and Hait, Paul W., to Action Films, Inc., mesne. Motion picture apparatus with removable cartridge. 3,817,610, Cl. 352-129.000.

Skovgaard, Helge Erling. Apparatus for recording the speeds of a vehicle on a travelling record carrier. 3,818,491, Cl. 346-21.000.

Slack, William Frederick, to Van Dyk Research Corporation. High speed xerographic printer. 3,818,493, Cl. 346-74.0eb.

SLI Industries: *See—*
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Sloan Valve Company: *See—*
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Slocum, Charles W.: *See—*
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Sluetz, Edward J.: *See—*
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Slusarczuk, George M. J.; and Brown, John F., Jr. Method of coagulating suspended solid impurities in water with silicone-silica compositions. 3,817,861, Cl. 210-47.000.

Small, Robert A., to Electronic Memories & Magnetics Corporation. Method of manufacturing armatures for electromechanical energy converters. 3,816,907, Cl. 29-598.000.

Small, Ronald J., to Burlington Industries, Inc. False-twist texturing process with improved feed yarns and feed rates. 3,816,994, Cl. 57-157.0ts.

Smit Nijmegen Electrotechnische Fabrieken N.V.: *See—*
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Smith, Alexander M., II, to Fiberwoven Corporation. Needled textile fabric. 3,817,820, Cl. 161-154.000.

Smith, Austin John: *See—*
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Smith, Bruce G., to Searle, G. D., & Co. Fluorescence quantitative thin layer chromatographic method. 3,817,706, Cl. 23-230.00b.

Smith, Dexter E.; and Stewart, William S., to Phillips Petroleum Company. Controlled polymerization process and apparatus. 3,817,962, Cl. 260-88.20r.

Smith, Fritz A.; and Riekert, Lothar H., to Mobil Oil Corporation. Hydroprocessing of reside with metal adsorption on the second stage catalyst. 3,817,855, Cl. 208-212.000.

Smith, George C., Jr.: *See—*
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Smith, Gerald R. Pocket pill box. 3,817,372, Cl. 206-42.000.

Smith, Glen C.; and Williams, Carson E., to Eastman Kodak Company. Swivelly mounted tailpipe for the jet device of a yarn bulking apparatus. 3,816,887, Cl. 28-1.400.

Smith, Herchel: *See—*
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Smith Kline & French Laboratories Limited: *See—*
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Smith, Leslie William: *See—*
Hicks, William Robert George; Newman, John Leslie; Smith, Leslie William; Smith, Leslie William; and Wates, Michael John, 3,817,267.

Smith, Michael P., to Texaco Inc. Methods for thermal neutron diffusion coefficient logging. 3,818,225, Cl. 250-264.000.

Smith, Remy J.: *See—*
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Smith, Stephen Clifford, to International Computers Limited. Switching circuits for energising a load. 3,818,310, Cl. 321-18.000.

Smith, Thomas R., to Maytag Company, The. Bulkhead seal for clothes dryer. 3,816,942, Cl. 34-242.000.

Smith, Willis R.; and Kure, Leonard J., to General Signal Corporation. Printed circuit connector and keying structure. 3,818,280, Cl. 317-101.0dh.

Smithe, F. L., Machine Company, Inc.: *See—*
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Sutton, Blaine M., 3,818,092.

Smolderen, Albert Emiel; and Cappuyns, Joseph Marie, to Agfa-Gevaert N.V. Web tensioning device. 3,817,468, Cl. 242-56.900.

Smrt, Thomas J. Actuator for aerosol can valve. 3,817,429, Cl. 222-402.220.

Smyser, Clarence M. Thermal shock-resistant clay. 3,817,763, Cl. 106-45.000.

Smyser, Clarence Michael. Process of making thermal shack-resistant ceramic ware. 3,818,087, Cl. 264-65.000.

Snapp, Thomas C., Jr.: *See—*
Albers, Kenneth H.; Blood, Alden E.; and Snapp, Thomas C., Jr., 3,817,932.

Snapp, Thomas C., Jr., to Eastman Kodak Company. Cyclization process. 3,817,996, Cl. 260-244.00r.

Snook, Carl T.: *See—*
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Snyder, Merlyn J.: *See—*
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Snyder, Robert G. Multipath conference system with switching. 3,818,139, Cl. 179-1.0cn.
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Stumpp, Gerhard, to Bosch, Robert, GmbH. Fuel injection apparatus for externally ignited internal combustion engines operating on fuel continuously injected into the suction tube. 3,817,229, Cl. 123-97.00b.
Stungis, George E.; and Merker, Steven L., to Brown & Williamson Tobacco Corporation. System and method for detecting amounts of conductive material on a moving web. 3,818,335, Cl. 324-65.00r.
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Sutherland, James F.; and Farley, Earl T., to Westinghouse Electric Corporation. Miniature power bus for printed circuit boards. 3,818,119, Cl. 174-72.00b.
Sutton, Blaine M., to Smithkline Corporation. Pyridyl ketipate lactones and derivatives in treating arthritis. 3,818,092, Cl. 424-266.000.
Suzaki, Yasuzi; Yamamoto, Yuji; and Tachibana, Atsushi, to Hitachi, Ltd. Method of geodetic measurement using diffusion type pulse laser. 3,817,620, Cl. 356-1.000.
Suzuki, Hisami: *See—*
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Szmuszkovicz, Jacob, to Upjohn Company, The. Triazinol[4,3-γ][1,4]benzodiazepin-2 (1H)-ones. 3,818,003, Cl. 260-248.0as.
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Tamburini, Mario. Method and apparatus for the construction of multistorey buildings. 3,818,084, Cl. 264-33.000.
Tanabe Seiyaku Co., Ltd.: *See—*
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Taylor, Henry F., to United States of America, Navy. Laser beam deflection system. 3,817,598, Cl. 350-160.00r.
Taylor, Lunn J. Direct synthesis of composite materials. 3,817,911, Cl. 260-38.000.
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Theurer, Josef; and Eglseer, Franz. Mobile track survey apparatus for determining a track parameter. 3,816,927, Cl. 33-144.000.
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Thomas, Edward E. Means for operating garment slide fastener. 3,817,433, Cl. 223-111.000.

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Thuler, Oscar. Apparatus and process for subdividing sealed glass tube containing radioactive gas. 3,817,733, Cl. 65-56.000.

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van de Sandt, Theo; deceased (by van de Sandt, Ingeburg; heir). Injection die-casting mechanism for sheathing a connection point. 3,817,673, Cl. 425-108.000.
Van De Voordf, G.: *See—*
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Van der Gaast, Harry. Grass catcher attachment for a rotary type. 3,816,986, Cl. 56-202.000.
Van Doorn, Donald W.; Hawkins, James B.; Pease, William C., III; and Colquett, Jack L., to Lummus Industries, Inc. Apparatus for wrapping bagging and the like about bales of fibers. 3,816,970, Cl. 53-124.00c.
Van Dyk Research Corporation: *See—*
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Van Engeland, Jozef Leonard: *See—*
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Van Riper, Richard W., Jr., to Ingress Manufacturing Company, Incorporated. One piece upholstery tufting button. 3,816,881, Cl. 24-90.00w.
van Sluys, Robert Nestor Joseph, to U.S. Philips Corporation. Noise reduction circuit. 3,818,362, Cl. 330-30.00r.
Van T'Blik, Klazinus Albertus, to Stork-Ima N.V. Filling machine. 3,817,301, Cl. 141-156.000.
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Vasamaa, Erkki. Self-locking cocking pin in firearms with closure by rotation. 3,816,950, Cl. 42-16.000.
Vasas, Martin M., to Bridgeport Metal Goods Manufacturing Company, The. Portal seal and wiper for product container. 3,817,637, Cl. 401-122.000.
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Verheyden, Julien P.: *See—*
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Verne, Stefan; and Heggs, Thomas Geoffrey, to British Insulated Callender's Cables Limited. Electric conductor. 3,817,783, Cl. 117-226.000.
Vernon, Walter F., to Phillips Petroleum Company. Alkylation apparatus. 3,817,708, Cl. 23-260.000.
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Villa, Jose L., to Thiokol Chemical Corporation. Liquid polymercapto adhesion promoting agents adapted to be incorporated in polysulfide sealant compositions to improve the adhesion thereof and polysulfide sealant compositions containing the same. 3,817,93, Cl. 260-75.00s.
Villarreal-Paredes, Alfonso. Valve for tanks of sanitary apparatus. 3,817,275, Cl. 137-436.000.
Vinh, Louis Andre Duong, to Etablissememts Guilliet. Cutting tool for parts made of wood or similar material. 3,817,304, Cl. 144-136.00r.
Viout, Andre; and Papantoniou, Christos, to Societe Anonyme dite: L'Oreal. Hair set lacquer and lotion composition. 3,817,950, Cl. 260-80.720.
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Von Bonin, Wulf, to Bayer Aktiengesellschaft. Hardening of waterglass solutions using pyrocarbonic acid esters and/or carboxylic-carbonic acid ester anhydrides. 3,817,766, Cl. 106-75.000.
Von Bose, Robert J.: *See—*
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von Cube, Hans-Ludwig; and Wagner, Edmund, to Bosch, Robert, G.m.b.H. Cooling apparatus semiconductor elements, comprising partitioned bubble pump, separator and condenser means. 3,817,321, Cl. 165-105.000.
Von Erden Karl: *See—*
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Von Hertzen, Ernst Gustav; and Aminoff, Carl E. F., to Suomen Sokeri Osakeyhtio (Finnish Sugar Company). Method for separating monosaccharides from mixtures including di-, and higher saccharides. 3,817,787, Cl. 127-46.00b.
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Vorbruggen Helmut; and Niedballa, Ulrich, to Schering Aktiengesellschaft. 5-Azapyrimidine nucleosides. 3,817,980, Cl. 260-211.50r.
Vrablik, Edward A., to Dimensional Systems Inc. Auxiliary memory interface system. 3,818,459, Cl. 340-172.500.
Vrba, James J.; and Buedel, Charles K., to GTE Automatic Electric Laboratories Incorporated. Self-stabilizing multiplexing arrangement. 3,818,143, Cl. 179-15.00a.
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Wada, Jin; Suzuki, Tadayuki; and Miyamats, Hiroki, to Tokyo Tanabe Company, Limited. 2-Phenyl benzothiazolyl acetic acid derivatives. 3,818,023, Cl. 260-304.000.

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Wahle, Gueter; and Dahlgruen, Rolf, to Hauni-Werke Koerber & Co. KG. Tubular mouthpiece and method and apparatus for making and attaching the same. 3,817,158, Cl. 93-77.0ft.

Wakamatsu, Hisato; and Endo, Kunio, to Nippondense Co., Ltd. Fuel control system for internal cumbustion engines. 3,817,226, Cl. 123-32.0ea.

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Walker, Charles W. E. Microwave window and antenna apparatus for moisture measurement of fluidized material. 3,818,333, Cl. 324-58.50a.

Walker, Richard A.; and Maloy, Robert W., to Killmorgen Corporation. Automatic direct-reading photometer apparatus and method. 3,818,198, Cl. 235-151.300.

Wallace, Joseph W., to Reynolds Metals Company. Apparatus for and method of drawing a cup-shaped article. 3,817,076, Cl. 72-351.000.

Wallace, Robert H.: *See—*
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Walter, Wolfgang, to Zahnradfabrik Friedrichshafen AG. Hydraulic rack and pinion steering gear. 3,817,155, Cl. 92-167.000.

Walters, Patrick A.: *See—*
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Ward, Bruce K. Vehicle. 3,817,545, Cl. 280-34.00r.

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Welzel, Gunter, to VEB Wirkmaschinenbau Karl-Marx-Stadt. Automatic progressive shed loom. 3,817,291, Cl. 139-12.000.

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Wentworth, Hobart L., to Sola Basic Industries, Inc. Smoke abater. 3,817,712, Cl. 23-277.00c.

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Wenzel, Kurt, to Telephon- und Telegraphen-Fabriks Aktiengesellschaft Kapsch & Sohne. Capacitor with flame inhibiting core. 3,818,288, Cl. 317-258.000.

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West, James I., Jr. Incinerating commode. 3,816,857, Cl. 4-131.000.

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Wilder, Leslie N.: *See—*
Matz, Bjorn J.; Nenninger, Theodore P.; Whitney, James C.; Ciaraldi, Anthony; and Wilder, Leslie N., 3,817,436.

Wilder, Paul R.; and Wood, Chester M., to Dover Corporation. Fluid dispensing nozzle. 3,817,285, Cl. 137-614.190.

Wildhaber, Ernest. Rotary positive displacement unit. 3,817,666, Cl. 418-195.000.

Wiley, Robert F., to Corning Glass Works. Catalytic converter. 3,817,714, Cl. 23-288.00f.

Wilfert, Karl, to Daimler-Benz Aktiengesellschaft. Shock-absorbing front-wall for motor vehicles. 3,817.553, Cl. 280-150.00b.

Wilfert, Karl; and Gotz, Hans, to Daimler-Benz Aktiengesellschaft. Cover pane for rear lights of vehicles, especially of motor vehicles. 3,818,211, Cl. 240-8.300.

Wilkins, Robert L. Communications apparatus for non-verbal handicapped persons. 3,818,448, Cl. 340-147.00r.

Wilkinson, Bruce L.: *See—*
Rosenstein, Allen B.; Stolowitz, Michael C.; and Wilkinson, Bruce L., 3,818,313.

Wilkinson Sward Limited: *See—*
Wordtmann, Jurgen E., 3,816,914.

Willems, Jozef Frans; and DeMunck, Joseph Louis, to Agfa-Gevaert. Development of photographic material. 3,817,753, Cl. 96-66.300.

William, John G., to Bracing Systems, Inc. Apparatus for suporting masonry walls against wind damage during construction. 3,817,006, Cl. 52-122.000.

Williams, Carson E.: *See—*
Smith, Glen C.; and Williams, Carson E., 3,816,887.

Williams, Charles E., to Ford Motor Company. Seat belt webbing tension measuring device. 3,817,093, Cl. 73-144.000.

Williams, Charles R.: *See—*
Corey, Albert E.; Donermeyer, Donald D.; Fantl, Joel; and Williams, Charles R., 3,817,892.

Williams, John E., to United Aircraft Corporation. Traffic detector using balun transformer phase detector. 3,818,430, Cl. 340-38.001.

Williams, Merton S., to Emhart Corporation. Padlock construction. 3,817,063, Cl. 70-24.000.

Williams, Richard Jean, to RCA Corporation. Passive cooler. 3,817,320, Cl. 165-47.000.

Willis, Frank R., to Andrew Corporation. Elliptical-to-rectangular waveguide transition. 3,818,383, Cl. 333-21.00r.

Willis, John George, to Solid State Technology, Inc. Damage detection. 3,818,467, Cl. 340-224.000.

Willis, Ronald R.: *See—*
Elfe, Thomas B., Jr.; Koppius, Otto G.; and Willis, Ronald R., 3,818,260.

Willner, Kurt; and Lavamaki, Maurice M., to Wilorco, Inc. Voltage regulator. 3,818,321, Cl. 323-43.50s.

Wilmont, Charles S., to Boeing Company, The. Integrated alignment system. 3,816,935, Cl. 33-228.000.

Wilorco, Inc.: *See—*
Willner, Kurt; and Lavamaki, Maurice M., 3,818,321.

Wilson, Clarence Walter. Recovery of salted-out protein. 3,817,834, Cl. 195-66.00r.

Wilson Pharmaceutical & Chemical: *See—*
Mancilla, Edward; Peting, Richard L.; and Van Ness, Laverne W., 3,817,831.

Wilson, Raymond George, to Coal Industry (Patents) Limited. Apparatus for steering a longwall mineral machine. 3,817,578, Cl. 299-1.000.

Wilson, Raymond W.; and Mckeon, Charles E., to Ford Motor Company. Tractor adjustable tread wheel construction. 3,817,580, Cl. 301-1.000.

Wilson, Robert R.: *See—*
Jordon, William E.; and Wilson, Robert R., 3,818,391.

Wimmer, Gunther W.: *See—*
Lee, Barry T.; Wimmer, Gunther W.; and Hyatt, Gilbert P., 3,818,496.

Winkelstrater, Claus; Burgener, Horst; and Hubrich, Christoph, to Gebr. Winkelstrater GmbH. Rotary-piston machine. 3,817,667, Cl. 418-206.000.

Winpower Manufacturing Company: *See—*
Carlson, Arthur E., 3,818,316.

Winston, Emanuel A. Wheel drive toy. 3,816,958, Cl. 46-202.000.

Winston, Theodore: *See—*
Fomenko, Sergei M.; Coker, Frank B.; Hauser, Frank W.; Muller, Alex M.; Smith, Remy J.; and Winston, Theodore, 3,818,126.

Witco Chemical Corporation: *See—*
Rankin, Malcolm R., 3,817,329.

Witte, Josef: *See—*

Schon, Nikolaus; Pampus, Gottfried; Witte, Josef; and Theisen, Dieter, 3,817,964.

Witte, Wolfgang Wilhelm Fritz. Tubular sample cell having radially extending flanges at the ends of the cell for flameless atomic absorption. 3,817,629, Cl. 356-244.000.

Wittle, J. Kenneth: *See—*
Zavitsanos, Peter D.; Wittle, J. Kenneth; and Zlupko, John E., 3,818,165.

Wittner, Rudolf. Preset pendulum apparatus. 3,817,027, Cl. 58-130.00r.

Wojciechowski, Gerald L.: *See—*
Dewitte, Maurice J.; and Wojciechowski, Gerald L., 3,818,274.

Wojtowicz, Edward A.: *See—*
Lazzarotti, S. James; Wojtowicz, Edward A.; and Hunter, James R., 3,817,516.

Wolf, Warren W., to Owens-Corning Fiberglas Corporation. Fiberizable fluorine-free glass compositions. 3,817,764, Cl. 106-50.000.

Wolfe, Earl W.: *See—*
Kitzner, Ernest W.; Rhodes, Alex; and Wolfe, Earl W., 3,817,118.

Wollweber, Hartmund; and Flucke, Winfried, to Bayer Aktiengesellschaft. Carbaliphatic-oxy aminophenylamidines. 3,818,070, Cl. 260-471.00c.

Wolverine World Wide, Inc.: *See—*
Egtvedt, Robert B., 3,816,945.

Wood, Chester M.: *See—*
Wilder, Paul R.; and Wood, Chester M., 3,817,285.

Wood, Philip: *See—*
Strasser, Jurgen H.; Wood, Philip; Berticevich, Edward N.; and Buchzik, Charles M., 3,817,259.

Wood, Philip Sheridan, deceased (by Lewis, Garlin W., administratrix). Speed control device for battery powered electric vehicles. 3,818,293, Cl. 318-139.000.

Wood, William D.: *See—*
Thorud, Richard A.; Tillotson, Henry B., III; and Wood, William D., 3,816,873.

Woolgar, Robert John: *See—*
Keith, Donald George; Morris, Douglas Barrett; Maack, Horst Egon Fred Ludwig; Mason, Ernest Arthur; and Woolgar, Robert John, 3,817,813.

Worden, Donald A.: *See—*
deVersterre, William I.; and Worden, Donald A., 3,818,284.

Wordtmann, Jurgen E., to Wilkinson Sward Limited. Holders for razor blades. 3,816,914, Cl. 30-64.000.

Work Area Protection Corporation: *See—*
Maine, Robert W., 3,818,439.

Wright, Donald O. Tennis racket hand positioning structure. 3,817,521, Cl. 273-75.000.

Wright, James P., to Systems Manufacturing Corporation. Suspension file. 3,817.587, Cl. 312-184.000.

Wright, Owen Edgar: *See—*
Chafer, Henry James; and Wright, Owen Edgar, 3,818,253.

Wright, Robert Lee, to Monsanto Company. Bonding fibers to rubber with unsaturate-resorcinol polymers. 3,817,778, Cl. 117-128.400.

Wuerker, Ralph F.; and Heflinger, Lee O., to TRW Inc. Multifrequency laser oscillator for holographic contouring. 3,818,372, Cl. 331-94.50m.

Wukusick, Carl S.: *See—*
Kuhlman, William C.; and Wukusick, Carl S., 3,817,793.

Wycoff, Keith H. Plural oscillator system for generating simultaneous pairs of sequential tones. 3,818,368, Cl. 331-48.000.

Wyss, Esher Limited: *See—*
Hausmann, Ernst, 3,817,447.

Xerox Corporation: *See—*
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Ha, In W.; and Sordello, Frank J., 3,818,297.
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McCrobie, George L., 3,817,599.
Whited, Charles A., 3,817,616.
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Yabe, Akira; Tsuda, Minoru; and Tanaka, Hideaki, to Agency of Industrial Science & Technology. . 3,817,757, Cl. Photosensitive composition co.

Yabe, Toshinori, to Bridgestone Tire Company Limited. Drum for building green tires. 3,817,812, Cl. 156-415.000.

Yaccino, Michael Joseph, to AMP Incorporated. Card reader-imprinter remote terminal. 3,818,454, Cl. 340-172.500.

Yagihara, Hiroshi: *See—*
Higuchi, Masaru; Ohnishi, Hajime; and Yagihara, Hiroshi, 3,817,900.

Yakovchuk, Jury Alexandrovich: *See—*
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Yamaguchi, Goro; Komatsu, Susumu; Yoshizaki, Kazuhiro; and Fukumoto, Tetsuo. Process for cracking or steam reforming hydrocarbons using an alkali polyaluminate catalyst. 3,817,726, Cl. 48-214.000.

Yamaguchi, Keiki, to Yokogawa Electric Works, Ltd. Electronic watthour meter with digital output representing time-integrated input. 3,818,340, Cl. 324-142.000.

Yamamoto, Hisao: *See—*
Moriyama, Hiroaki; Yamamoto, Hisao; Inaba, Shigoho; and Nagata, Hideo, 3,817,984.

Yamamoto, Manabu, to Hitachi, Ltd. Laser imaging device. 3,818,129, Cl. 178-7.30d.

Yamamoto, Roy Isamu; and Saines, George S., to Texaco Inc. Alkylacrylate-alkanediol methacrylate interpolymers and pour depressed compositions thereof. 3,817,866, Cl. 252-56.00r.

Yamamoto, Yuji: *See—*
Suzaki, Yasuzi; Yamamoto, Yuji; and Tachibana, Atsushi, 3,817,620.

Yamashita, Sadahiko; Anbe, Toshi; and Koike, Yjiro, to Matsushita Electric Industrial Company Limited. Oscillatory device utilizing pulse generating diode. 3,818,377, Cl. 332-16.00r.

Yamato, Eisaku; Wada, Masao; Sekiguchi, Toshio; Sato, Masanori; Nagao, Taku; Nakajima, Hiromichi; Kiyomoto, Akio; and Kawanishi, Masazumi, to Tanabe Seiyaku Co., Ltd. 1(Polymethoxybenzyl) 6 hydroxyl 1,2,3,4 tetrahydroisoquinolines. 3,818,015, Cl. 260-289.0r.

Yamauchi, Satoshi; and Inoue, Takashi, to Ricoh Co., Ltd. Graphic display system. 3,818,483, Cl. 340-324.00r.

Yancey, Paul J., to Union Carbide Corporation. Abrasive polishing suspensions and method for making same. 3,817,727, Cl. 51-298.000.

Yarborough, John M.: *See—*
Fennema, Claude L.; Brain, Alfred E.; Rosen, Charles A.; and Yarborough, John M., 3,818,191.

Yardley, John P.; Bright, Royal E.; Rees, Richard W.; and Smith, Herchel, to American Home Products Corporation. 2-Substituted-cinchona alkaloids. 3,818,013, Cl. 260-284.000.

Yarita, Hidetoshi: *See—*
Miya, Masami; Yarita, Hidetoshi; and Atsuzaka, Hirotaka, 3,818,345.

Yasenchak, Richard W.: *See—*
Harper, Ernest V.; and Yasenchak, Richard W., 3,818,290.

Yasunaga, Ryuichi: *See—*
Sawada, Katsuo; Yoneda, Eisaku; Kajikawa, Saburo; and Yasunaga, Ryuichi, 3,816,983.

Ying, Sui C.; and Luzader, James E., to Westinghouse Electric Corporation. Tube-tension device for water cooled turbine generator rotors. 3,818,256, Cl. 310-59.000.

Yoch, James J. Side opening container. 3,817,444, Cl. 229-48.00r.

Yokogawa Electric Works, Ltd.: *See—*
Nakashima, Tatsunari; and Ohta, Susumu, 3,818,273.
Yamaguchi, Keiki, 3,818,340.

Yolles, Seymour, 10% to Brook, David E. Chewing gum with sustained flavor release compositions. 3,818,107, Cl. 426-3.000.

Yoneda, Eisaku: *See—*
Sawada, Katsuo; Yoneda, Eisaku; Kajikawa, Saburo; and Yasunaga, Ryuichi, 3,816,983.

Yoshida, Tomio; and Okamoto, Keiichi, to Matsushita Electric Industrial Co., Ltd. Character display system. 3,818,482, Cl. 340-324.0ad.

Yoshida, Yoshinori: *See—*
Kawakami, Masato; Yoshida, Yoshinori; Nozaki, Chihiro; and Imai, Hideki, 3,817,954.

Yoshimura, Toru: *See—*
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Yoshiyagawa, Mitsugi, to Nippon Selfoc Kabushiki Kaisha (a/k/a Nippon Selfoc Co., Ltd.). Production of light-conducting glass fibers by vapor partial pressure atmosphere. 3,817,731, Cl. 65-32.000.

Yoshiyasu, Mitsuo: *See—*
Nakayama, Yujiro; and Yoshiyasu, Mitsuo, 3,817,771.

Yoshizaki, Kazuhiro: *See—*
Yamaguchi, Goro; Komatsu, Susumu; Yoshizaki, Kazuhiro; and Fukumoto, Tetsuo, 3,817,726.

Yost, Kenneth J., to Coate Burial Vault Inc. Aerobic sewage treatment system. 3,817,858, Cl. 210-14.000.

Young, Edward L. J., to Lear Siegler, Inc. Vehicle suspension system and bearing construction therefor. 3,817,550, Cl. 280-104.50a.

Young, Raymond H., Jr.; Markhart, Albert H.; and Martins, Joseph G., to Monsanto Company. Polymeric ultraviolet light stabilizers prepared from phenol formaldehyde condensates. 3,817,924, Cl. 260-59.000.

Young, Vernon V., to Commercial Solvents Corporation. Preparation of zearalanone or of racemic mixtures of zearalanol diamers. 3,818,044, Cl. 260-343.20f.

Younger, Donald Anthony, to Imperial Chemical Industries Limited. Petroleum resins. 3,817,953, Cl. 260-82.000.

Yows, Phillip W.: *See—*
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Zaagman, David A., to Zaagman, Ed., Inc. Ski boot binding. 3,817,542, Cl. 280-11.35b.

Zaagman, Ed., Inc.: *See—*
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Zadow, Dale W.: *See—*
Berry, Holland J.; Hardy, William C.; and Zadow, Dale W., 3,817,332.

Zahnradfabrik Friedrichshafen AG: *See—*
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Zaky, Amin Y.: *See—*
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Zankl, Frank: *See—*
Lohneis, Earl R.; and Zankl, Frank, 3,817,391.
Zavitsanos, Peter D.; Wittle, J. Kenneth; and Zlupko, John E., to General Electric Company. Electric circuit interrupter. 3,818,165, Cl. 200-144.00c.
Zehner, William H., to Tecno Products Company. Reciprocating pump. 3,817,663, Cl. 417-569.000.
Zehnpfennig, Theodore F., to Visidyne, Inc. Compact camera with highly folded optical system. 3,818,498, Cl. 354-150.000.
Zeile, Karl: *See—*
Stahle, Helmut; Koppe, Herbert; Zeile, Karl; Hoefke, Wolfgang; and Samtleben, Hans-Wolfgang, 3,818,094.
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Zephyr American Corporation: *See—*
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Zeta International Engineering, Inc.: *See—*
Bartley, John E., 3,817,440.
Zielinski, James, to Esso Research and Engineering Company. Use of dithiobiurets as fungicides. 3,818,104, Cl. 424-322.000.
Zillgitt, Ulrich: *See—*
Schmidt, Joachim; Merkl, Ernst; and Zillgitt, Ulrich, 3,818,215.
Zimmer, Jerry W.: *See—*
Mudge, John L.; Zimmer, Jerry W.; and Taft, Keith G., 3,818,289.
Zimmerman, Richard Henry: *See—*
Evans, William Robert; and Zimmerman, Richard Henry, 3,818,415.
Zimmerman, Thomas C.; and Michels, Charles E., to Reliance Electric Company. Fully automatic wrapping machine. 3,816,969, Cl. 53-66.000.
Zimmermann, Norbert, to Triumph Werke Nuernberg A.G. Automatic print head shifting device. 3,817,365, Cl. 197-1.00r.
Zink, John, Company: *See—*
Reed, Robert D.; and Schwartz, Robert E., 3,817,695.
Zinn, Werner, to Siemens Aktiengesellschaft. Ferromagnetic heterojunction diode. 3,818,328, Cl. 324-43.00r.
Zinsser, Harry F.; and Locke, Richard E., to Copperweld Steel Company. Joining lengths of wire end to end for manufacture of bimetallic wire. 3,818,173, Cl. 219-107.000.
Zipilivan, Eliseo M.; Blatt, William F.; and Loeffler, Herbert H., to Amicon Corporation. Disposable liquid concentrating device. 3,817,379, Cl. 210-94.000.
Zipp, Leonard S., Jr.: *See—*
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Zirngiebl, Eberhard: *See—*
Gebauer, Wolfgang; Schlee, Richard; and Zirngiebl, Eberhard, 3,817,846.
Guth, Hans; Eberlein, Richard; Wiechers, Herbert; and Zirngiebl, Eberhard, 3,817,847.
Zlupko, John E.: *See—*
Zavitsanos, Peter D.; Wittle, J. Kenneth; and Zlupko, John E., 3,818,165.
Zoecon Corporation: *See—*
Henrick, Clive A., 3,818,047.
Henrick, Clive A.; and Siddall, John B., 3,818,049.
Zoleta, Jose C., to Constantino, Petronilo C., & Associates. Automobile air conditioning system employing thermoelectric devices. 3,817,043, Cl. 62-3.000.
Zschimmer, Gero. Apparatus for converting a measuring voltage into values not proportional thereto. 3,818,207, Cl. 235-197.000.
Zunzer, Egon, to Rexroth, G. L., GmbH. Hydraulic control circuit. 3,817,153, Cl. 91-411.00r.
Zupan, Benjamin J., Jr.; and Zipp, Leonard S., Jr. Safety-bolster. 3,817,080, Cl. 72-432.000.
Zurick, Albert T.: *See—*
Zurick, Albert T., 3,817,209.
Zurick, Albert T., to Zurick, Albert T. and Van Vlaanderen Container Machinery, Inc. Gravure coating. 3,817,209, Cl. 118-258.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JUNE, 1974

NOTE.— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Boschi, Giorgio: *See*—
Natta, Giulio, Mazzanti, and Boschi. Re. 28,050.

Bouton, Thomas C., and S. Futamura, to The Firestone Tire & Rubber Co. Process for preparing colorless, high-vinyl diene polymers. Re. 28,047, 6–18–74, Cl. 260—94.2

Controlled Environment Systems Inc.: *See*—
Widmayer, Don F. Re. 28,044.

Eaton Corp.: *See*—
McDermott, Hugh L. Re. 28,051.

Firestone Tire & Rubber Co., The: *See*—
Bouton, Thomas C., and Futamura. Re. 28,047.

Futamura, Shingo: *See*—
Bouton, Thomas C., and Futamura. Re. 28,047.

Gaffey, Troy M., and K. G. Wernicke, to Textron Inc. In-plane out-of-plane flapping prop-rotor frequency decoupling. Re. 28,045, 6–18–74, Cl. 416—102.

Hageman, Carlton V., and V. F. Rana, to Harris-Intertype Corp. Apparatus and method for separating signatures in a gatherer. Re. 28,048, 6–18–74, Cl. 271—101.

Harris-Intertype Corp.: *See*—
Hageman, Carlton V., and Rana. Re. 28,048.

Litton Industrial Products, Inc.: *See*—
Oriomoski, Roger W., and Reed Rolled Thread Die Co. Re. 28,049.

Mazzanti, Giorgio: *See*—
Natta, Giulio, Mazzanti, and Boschi. Re. 28,050.

McDermott, Hugh L., to Eaton Corp. Torque transmitting device. Re. 28,051, 6–18–74, Cl. 418—61.

Montecatini Edison S.p.A.: *See*—
Natta, Giulio, Mazzanti, and Boschi. Re. 28,050.

Natta, Giulio, G. Mazzanti, and G. Boschi, to Montecatini Edison, S.p.A. Sulfur-vulcanizable elastomeric copolymers of ethylene, propylene and aliphatic diolefins, and process for preparing same. Re. 28,050, 6–18–74, Cl. 260—80.7.

Oriomoski, Roger W., and Reed Rolled Thread Die Co., to Litton Industrial Products, Inc. Thread rolling die with stabilizing portion. Re. 28,049, 6–18–74, Cl. 72—469.

Rana, Victoriano F.: *See*—
Hageman, Carlton V., and Rana. Re. 28,048.

Reed Rolled Thread Die Co.: *See*—
Oriomoski, Roger W. Re. 28,049.

Renold, Walter, to Seaco Computer-Display Inc. Film-positioning system. Re. 28,046, 6–18–74, Cl. 355—54.

Seaco Computer-Display Inc.: *See*—
Renold, Walter. Re. 28,046.

Textron Inc.: *See*—
Gaffey, Troy M., and Wernicke. Re. 28,045.

Wernicke, Kenneth G.: *See*—
Gaffey, Troy M., and Wernicke. Re. 28,045.

Widmayer, Don F., to Controlled Environment Systems Inc. Electric current control apparatus. Re. 28,044, 6–18–74, Cl. 315—291.

LIST OF PLANT PATENTEES

Cobia, B. L., Inc.: *See*—
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Cobia, Barnell L., to B. L. Cobia, Inc. Cactaceae plant family. 3,574, 6–18–74, Cl. 88.

Coffin, Samuel L. Azalea plant (voluptuous). 3,572, 6–18–74, Cl. 56.

Honda, Osamu H., to Woodside Nurseries Co. Carnation plant ruby red sim. 3,573, 6–18–74, Cl. 73.

Jackson & Perkins Co.: *See*—
Warriner, William A. 3,571.

Motsinger, Armard V. Ilex (Holly). 3,575, 6–18–74, Cl. 65.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,571, 6–18–74, Cl. 11.

Woodside Nurseries Co.: *See*—
Honda, Osamu H. 3,573.

LIST OF DESIGN PATENTEES

Anderson, David E., to Bell & Howell Co. Spirit duplicator. 231,863, 6–18–74, Cl. D64—11.

Annett, Leland W., to Minnesota Mining and Mfg. Co. Slide tray. 231,859, 6–18–74, Cl. D61—1.

Bard, C. R., Inc.: *See*—
Genese, Joseph N. 231,865.

Bausch & Lomb Inc.: *See*—
Huckenbeck, Claus O. 231,858.

Bell & Howell Co.: *See*—
Anderson, David E. 231,863.

Bell Telephone Laboratories, Inc.: *See*—
Genaro, Donald M., McGarvey, and Sylvester. 231,836.

Berne, William E., to La Berne Mfg. Co., Inc. Postural drainage table. 231,864, 6–18–74, Cl. D83—1.

Blank, John M., C. E. Cox, and G. Zimmerman, to Owens-Illinois, Inc. Nebulizer unit or similar article. 231,866, 6–18–74, Cl. D83—1.

Bloch, Jack, to Foster Grant, Co., Inc. Spectacle front. 231,857, 6–18–74, D57—1.

Canon, Jack Y. Gun aiming device. 231,828, 6–18–74, Cl. D22—7.

Capehart Corp.: *See*—
Levine, Robert. 231,815.
Levine, Robert. 231,816.
Levine, Robert. 231,817.
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Clark Equipment Co.: *See*—
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Blank, John M., Cox, and Zimmerman. 231,866.

Coxon, Philip: *See*—
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Daley, Marjorie R. Disposable paper aprons and disposable paper baby bibs. 231,810, 6–18–74, Cl. D2—227.

Daubert, Dan L. Field service trailer. 231,825, 6–18–74, Cl. D12—105.

Felege, William R.: *See*—
Tuschak, Bernard J., Felege, and Lepselter. 231,843.

Ferber, Martin. Key holder. 231,870, 6–18–74, Cl. D87—8.

Frasier, Gerald W., to Rain Jet Corp. Shower head. 231,829, 6–18–74, Cl. D23—35.

Friedman, Bernard. Flying saucer toy. 231,851, 6–18–74, Cl. D34—15.

Gemini Products, Inc.: *See*—
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Genaro, Donald M., J. N. McGarvey, and G. E. Sylvester, to Bell Telephone Laboratories, Inc. Telephone stand. 231,836, 6–18–74, Cl. D26—14.

General Electric Co.: *See*—
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Genese, Joseph N., to C. R. Bard, Inc. Urine meter. 231,865, 6–18–74, Cl. D83—1.

Goozner, Murray. Faceless doll. 231,842, 6–18–74, Cl. D34—4.

Gould, Maurice O., and K. A. Wendt. Animal oiler. 231,840, 6–18–74, Cl. D30—99.

Gramling, James T., to Gramling Tool & Die, Inc. Punch press. 231,860, 6–18–74, Cl. D63—1.

Gramling, James T., to Gramling Tool & Die, Inc. Punch press. 231,861, 6–18–74, Cl. D63—1.

Gramling, James T., to Gramling Tool & Die, Inc. Punch press. 231,862, 6–18–74, Cl. D63—1.

Gramling Tool & Die, Inc.: *See*—
Gramling, James T. 231,860.
Gramling, James T. 231,861.
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Grant, Foster, Co., Inc.: *See*—
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CLASS 267
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CLASS 270
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CLASS 271
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CLASS 273
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CLASS 279
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CLASS 292
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CLASS 293
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CLASS 294
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CLASS 296
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28M 3,817,569
35A 3,817,570
65A 3,817,571
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CLASS 297
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CLASS 298
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CLASS 299
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CLASS 301
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CLASS 303
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289 3,818,250
291 3,818,251
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CLASS 308
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CLASS 310
8.1 3,818,254
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CLASS 312
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CLASS 313
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CLASS 317
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33 3,818,275
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574 3,818,301
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603 3,818,303
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69R 3,818,315

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CLASS 323
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57R 3,818,331
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58.5A 3,818,333
65R 3,818,334
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140R 3,818,339
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94.5M 3,818,372
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94.5 3,818,374
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116M 3,818,376

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24.1 3,818,384
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30R 3,818,379
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70CR 3,818,380
70R 3,818,387
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73W 3,818,388

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CLASS 335
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210 3,818,394
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271 3,818,397
278 3,818,398
295 3,818,399

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CLASS 337
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17F 3,818,415
17M 3,818,414
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74R 3,818,419
90R 3,818,420
177R 3,818,421
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258P 3,818,423
258T 3,818,424

CLASS 340
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5H 3,818,427
8S 3,818,440
15.5MC 3,817,345
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38L 3,818,430
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52H 3,818,431
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58 3,818,435
64 3,818,436
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70 3,818,438
81R 3,818,439
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146.1AL 3,818,442
146.3SY 3,818,443
146.3C 3,818,446
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166R 3,818,452
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3,818,461
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173FF 3,818,462
174MA 3,818,464
174ZB 3,818,465
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224 3,818,467
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244R 3,818,470
261 3,818,471
280 3,818,472
309.1 3,818,473
310R 3,818,481
324AD 3,818,474
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324A 3,818,475
324R 3,818,483
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113R 3,818,479
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74EB	3,818,493
74P	3,818,492

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70	3,817,594
96B	3,817,595
103	3,817,596
150	3,817,597
160R	3,817,598
183	3,817,599
186	3,817,600
187	3,817,601
214	3,817,602
218	3,817,603
232	3,817,604
294	3,817,605
310	3,817,606

CLASS 352

74	3,817,607
78C	3,817,608
87	3,817,609
129	3,817,610
155	3,817,611

CLASS 353

27	3,817,612
67	3,817,613
121	3,817,614

CLASS 354

42	3,818,494
53	3,818,495
75	3,818,496
89	3,818,497
150	3,818,498
238	3,818,499

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3DD	3,817,616
3R	3,817,615
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71	3,817,617
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1	3,817,619
	3,817,620
	3,817,631
17	3,817,621
39	3,817,632
73	3,817,622
97	3,817,633
103	3,817,623
114	3,817,634
138	3,817,624
141	3,817,625
168	3,817,626
171	3,817,635
180	3,817,627
210	3,817,628
244	3,817,629
	3,817,630

CLASS 357

49	3,818,289

CLASS 360

2	3,818,500
40	3,818,501
77	3,818,502
85	3,818,503
93	3,817,539
96	3,818,504
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130	3,818,506

CLASS 401

78	3,817,636
122	3,817,637
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122	3,817,639
138	3,817,640
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385	3,817,642

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76	3,817,643
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121	3,817,645
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8	3,817,647
59	3,817,648
211	3,817,649
234	3,817,650

CLASS 415

1	3,817,651
53	3,817,652
74	3,817,653
103	3,817,654
217	3,817,655

CLASS 416

102	Re.28,045
180	3,817,656
244	3,817,657

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84	3,817,659
269	3,817,660
312	3,817,661
333	3,817,662
569	3,817,663

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522	3,818,088

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9	3,818,089
258	3,818,010
	3,818,090
263	3,818,091
266	3,818,092
270	3,818,093
273	3,818,094
	3,818,095
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	3,818,097
274	3,818,098
275	3,818,099
281	3,818,100
300	3,818,101
303	3,818,102
317	3,818,103
322	3,818,104
358	3,818,105

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4C	3,817,669
46	3,817,670
66	3,817,671
73	3,817,672
108	3,817,673
113	3,817,674
207	3,817,675
387B	3,817,676
393	3,817,677
438	3,817,678
450R	3,817,679
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CLASS 426

2	3,818,106
3	3,818,107
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330	3,818,111

CLASS 431

1	3,817,681
6	3,817,682
95	3,817,683
104	3,817,684
116	3,817,685
125	3,817,686
131	3,817,692
153	3,817,693
202	3,817,687
	3,817,695
255	3,817,691
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343	3,817,688
349	3,817,689
350	3,817,690

CLASS 432

15	3,817,696
105	3,817,697

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D 2—	227	231,810
	276	231,811
		231,812
		231,813
D 6—	149	231,814
	151	231,815
		231,816
		231,817
	154	231,818
	187	231,819
D 7—	137	231,820
D 8—	101	231,822
	131	231,821
D 9—	222	231,823
	240	231,824
D12—	105	231,825
	156	231,826
D21—	6R	231,827
D22—	7	231,828
D23—	35	231,829
	53	231,830
		231,831
		231,832
	93	231,833
D26—	1P	231,834
	14A	231,835
		231,836
D29—	1	231,837
		231,838
D30—	39	231,839
	99	231,840
D34—	2R	231,841
	4	231,842
	5CH	231,844
	GH	231,850
	SH	231,845
	SS	231,843
		231,846
		231,847
		231,848
		231,849
	15HH	231,851
D37—	1A	231,852
D45—	10C	231,853
D48—	20E	231,854
D55—	1B	231,855
D56—	4D	231,856
D57—	1E	231,858
	F	231,857
D61—	S	231,859
D63—		231,860
		231,861
		231,862
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D83—	1D	231,864
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55 : 3,816,874
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8 : 231,811
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11 : 231,827

17 : 231,853
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41 : 231,833
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6 : 3,571

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12 : 3,574

24 : 3,575

29 : 3,572

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